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Shipments and Output Near Peak

Buyers Remain Cautious But Pressure of Current Demand Still Lifts Operations—Steel Ingot Production Is Near High Record—Railroad and Structural Buying Keeps Up—Pig Iron and Some Steel Lines Easier

HEAVY shipments by the mills which again are approaching a record height, represent the strongest element of the steel situation and tend to discount the permanence of the present restrained and conservative buying. In February, Steel corporation plants shipped on the average, 6000 tons daily in excess of January which taken in connection with the gain of 114,000 tons in unfilled orders, indicates the leading producer booked about 260,000 tons more business in that period than in January. Independent makers have been making a comparable showing and the general tendency still is toward higher production under the pressure of current demand. Steel corporation operations are up to 96 per cent this week, or substantially at the maximum point and independents average 85 per cent, making the general steel industry 88 to 89 per cent active.

Many buyers of steel still are reluctant to obligate themselves for second quarter. This is resulting in an unbalanced situation of order books, with consequent keenness of competition and shaded prices. Sheet bar consumers are closing for April to June requirements, generally, it is understood at an unchanged $42.50 price. Present nut, bolt and rivet prices are expected to be applied to second quarter. Plates remain the weakest heavy line. Cross currents are shown in sheets, with blue annealed firmer. A new card of extras on cold-finished steel bars, to conform with new extras last year in merchant steel bars became effective this week.

Steel Gain Swift

Rapidity of the recent rise of steel production is set forth by the figures for February which showed the third highest rate of ingot output in history being exceeded only by April and May of last year. The daily average in February, 151,227 tons, represented 96 per cent of the high record rate, last April and was a gain of 33 per cent since December. The daily average in January was 133,331 tons. On the February basis the country was making steel ingots on the scale of 47,030,000 tons annually. In January the annual rate was 41,460,000 tons and in December, 35,370,000 tons.

The market tendency toward easiness again is displayed in IRON TRADE REVIEW's composite of fourteen leading iron and steel products which for the third consecutive week shows a slight decline. This week's average is $43.27 against $43.29 last week.

New Work Active

Prospects and new contracts for building steel are good. New work is making a better showing than expected. At Chicago several large projects came out for bids this week with the 15,000-ton Hotel Stevens again active. New York reports 50,000 tons of school work planned with 6000 tons now in the market. Subway extensions there also will take 17,000 tons and a lift span for the Jersey Central 8000 tons. Awards the past week were the heaviest in several weeks totaling 32,327 tons.

Western roads are coming out with new inquiries for steel rails. Demand for track fastenings, which has been lagging behind rails, is showing more life as spring approaches. One road is to buy 20,000 to 25,000 tons additional. The Clover Leaf has placed 9000 tons. Equipment orders have been few this week though negotiations are numerous. According to steel company figures car buying this year to date is more than 150 per cent ahead of 1923.

Cast iron pipe demand especially from municipalities is heavier with some shops now filled for three months. New York has distributed 12,000 tons, Chicago is closing 5400 tons, Portland, Oreg., 5050 tons.

Leading operators, it is indicated, are inclined to favor no change in iron ore prices for the coming season. Though some merchant furnaces are urging reductions, steel producing interests believe the greater good for all would result from a stabilized market. Reservations for a considerable tonnage have been made subject to later prices.

Pig Iron Softer

Though pig iron consumption as measured by rising shipments and declining furnace stocks, is heavier, buyers continue their efforts to force lower prices by avoiding forward purchases. The market shows more softness with 50-cent concessions appearing in several districts. A report that the Steel corporation is again in the market for 25,000 tons has not been confirmed. Alabama furnace stocks declined 14,000 tons in February to a total of 82,000 tons March 1.

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Analyzing Steel and a Trade Paper

ANALYSIS is a familiar word in iron and steel; everything sooner or later is judged according to analysis, "weighed in the balance." Analysis has its place in publishing as it has in metallurgy, and it frequently throws light on facts concerning a periodical, as it does with

Steel channels, bolted together, form bottoms and sides of new barges. See page 736

respect to steel. Consider for a moment: In an average issue of Iron Trade Review there are 588 items and articles of business or technical information; 36 illustrations, the majority of them amplifying technical description, and 13 tables of various sizes, principally prices of material and finished products. These tables contain 1600 or more separate price quotations. The figures indicate the variety and detail of iron and steel and related business information, with which each issue of Iron Trade Review is replete.

Do You Know That—

Among IRON TRADE REVIEW subscribers 3249 use 4545 gasoline trucks; 135 use 171 electric trucks, and 603 use 774 horse-drawn trucks. Here's an opportunity to develop a market or supply one already established.

Pig Iron Buyers Remain Out of Market and Prices Are Untested—Some Makers Mark Down Quotations 50 Cents

PITTSBURGH, March 11.—Improvement in the pig iron market is not expected before the end of the month or early in April. In the meantime inquiries are scarce and sales few. Prices practically are untested. Nothing is known here regarding a report to the effect that the Steel corporation is inquiring for 25,000 tons of basic iron. The last sale of basic was made at $22 valley. Producers are quoting $23 as a minimum for second quarter and $22 for prompt shipment. A bessemer user is obtaining figures on 500 tons, delivery to start immediately and go through June. This buyer has been quoted $23 to $23.50, and $24 valley; or Johnstown, Pa., would be quoted for the second quarter only. One hundred tons of high silicon bessemer brought $24. Small lot sales of foundry iron are going at $23 to $23.50, valley, for No. 2. These levels are quoted for prompt or future shipment. Malleable inquiries originating in Cincinnati and Philadelphia districts have been received here. On one 2000-ton lot for the East $22.50 and $23 valley, have been quoted. Low phosphorus demand is limited to a few small inquiries and $29 valley, is quoted. The Reliance Coke & Furnace Co. blew in its Claire stack at Sharpsville, Pa., last week on foundry iron and will change to basic later. The Allen S. Davison Co. will not blow in its Sharpsville stack before April 15.

Moderate Tonnage Sold

Boston, March 11.—Pig iron buying for second quarter is progressing along fairly normal lines in New England. Consumers are cautious in estimating tonnage because present rate of production is not heavy. Nearly all foundries, however, are coming into the market for conservative amounts. The West Massachusetts consumer who has been inquiring for from 7000 to 8000 tons is understood to have bought 7000 tons during the week from several furnaces. Prices while unstated are known to have been low against this business, probably under $22, eastern Pennsylvania furnace which means $25.65, delivered. Other than this prices seem to be holding fairly firm at $23 eastern Pennsylvania for No. 2X iron, 2.25 to 2.75 silicon. Occasional reports of shading to $22.50 are heard. Buffalo iron is offered for any delivery up to July at $22 at the furnace or $26.91 delivered. The bulk of the week's tonnage was made up of orders of 200 tons or under.

Better Inquiry Appears

New York, March 11.—Current inquiries of pig iron call for at least 12,000 tons, approximately one-half of which is for shipment within the next 30 days and the remainder for the second quarter. One inquiry alone calls for 6000 tons of malleable and basic iron for shipment over the next three months. Total sales during the past week probably did not exceed 4000 tons in this territory. The market on eastern foundry iron is nominal at $23, base furnace. It is understood that this figure was shaded on some attractive business placed in New England during the past week.

Sales of Buffalo iron in this territory have brought $22, base furnace, with full differentials and nothing under $22 was done as far as known.

Continental foundry iron has been offered at $22.25, duty paid tidewater for iron containing less than 0.1 per cent phosphorus and averaging 3 per cent silicon but no sales have resulted. Buyers have pointed out in some instances that as a result of the congestion at European ports they have been getting poor deliveries.

Inquiries Pending at Buffalo

Buffalo, March 11.—Inquiry for pig iron during the week totaled 12,000 to 15,000 tons. The Gould Coupler Co. is inquiring for 2000 to 5000 tons of basic and for 1000 to 3000 tons of malleable. An inquiry for 4000 tons of foundry iron for shipment to the East also is pending. The 10,000-ton inquiry issued by the heating apparatus manufacturers in Dunkirk and Utica, N. Y., has been closed with a Buffalo furnace at some concession in prices. Sales for the week are estimated at 8000 tons. The going price for No. 2 plain (1.75 to 2.25 silicon) is $22, with $22.50 asked for No. 2X (2.25 to 2.75 silicon). This grade has also been sold at $22, it is reported.

The American Radiator Co. has inquired for 6000 tons for third quarter, presumably southern.

Places 5000 Tons of Southern

Cincinnati, March 11.—Sellers say pig iron orders in the past week represented the smallest tonnage of any week since the middle of November. Melters continue their efforts to force down prices without doing much buying. While inquiry is somewhat better, it is not known to what extent this is a forerunner of improved conditions. The Dayton Steel Foundries Co., Dayton, O., bought 400 tons of low phosphorus northern iron, while 100 tons of high silicon northern iron was sold to the Glove Stove & Range Co., Kokomo, Ind. The United States Cast Iron Pipe Co. is reported to have bought 5000 tons of southern iron for its Burlington, N. J., plant. The most important inquiry before the trade is that of the Louisville & Nashville railroad for 380 tons of southern, northern and charcoal iron. Northern iron is freely offered at $24, Ironton, and small tonnages have been purchased as low as $23.50, furnace. Southern iron is quoted at $22.50 to $23, Birmingham.

Price Situation Easier

Cleveland, March 11.—The pig iron market continues very quiet, despite the fact that shipments are heavy. Some sellers say there is not enough business in sight at present to induce them to cut their prices, while others represented in the northern Ohio group announce their willingness to accept orders at 50 cents less than a week ago, or meet competition. The Cleveland market still is quoted at $24, furnace, for delivery in the 50-cent switching area, though sellers report there is almost complete absence of orders or inquiry. The price of $24 is untested. The lake furnace price also remains at $24, and sales aggregating several thousand tons are reported at this figure in the Detroit district, where general foundry operations are around 90 per cent. A leading merchant interest that has been holding to $24, valley, for its iron now offers to do $23.50. At Buffalo the price has been marked down from $22.50 to $22, but the Ironton base is held at $24. A Cleveland maker is quoting $23, furnace, for outside delivery. Iron can be purchased readily at $22.50, valley, and competition

at this figure will be met, in outside territory. The only interests in the northern Ohio group reporting sales during the past week give figures which total 6000 tons, for all furnaces. No concealment is made of the fact that buyers are withholding purchases in expectations of forcing down the market, and a state of deadlock seems to exist for the present, with furnace interests feeling that the turning point is close at hand. An important interest states that its February business was 75 per cent of its January total, and its bookings thus far in March indicate an average of 75 per cent under February. Another says that if its shipments continue at their present rate through March the month's record will be the largest in its history.

No basic business is included in the week's transactions. One seller reports basic can be had at $22, valley.

Chicago Market Quiet

Chicago, March 11.—The northern pig iron market presents a peculiar complex of strength and weakness. Many foundries bought fairly heavily early in the year for business expected to develop shortly but which is just now coming out. These foundries consequently now are working out earlier purchases, and increased operations bring no parallel buying of iron, while competition for castings business is keen and prices are cut sharply. Foundry operations in this district probably average 60 per cent. Orders for castings for railroad cars are not coming out, especially to malleable shops, and there is no stimulating influence present to drive buyers into buying and furnaces into urging sales. Melters expect neither an increase nor decrease in price, and with prompt shipments possible, they are keeping inventories low. Some resale iron has been sold considerably below the market. Last week's sales included a considerable number of lots of 200 to 500 tons.

Inquire for Basic at St. Louis

St. Louis, March 11.—Pig iron sales are few in number and small in quantity. However, the melt is increasing steadily at steel plants and foundries. Jobbing foundries, particularly those specializing in gray iron castings, report that business has opened up for them in larger volume since the middle of February. Pig iron prices are unchanged. Northern iron and the local product are held firmly, but some southern makers are disposed to shade. The largest sale reported is 1000 tons of foundry iron to a St. Louis interest for second quarter, the business going to the leading local producer. The same maker sold several lots aggregating 200 tons. Other sales include 300 tons to a local melter. A St. Louis steelmaker is inquiring for 2000 tons of basic, and an East Side melter is asking prices on 3000 to 5000 tons of basic.

Southern Iron Market Slow

Birmingham, Ala., March 11.—Southern pig iron sales do not exceed the current production though the market is considered strong as the probable output for the second quarter has been well covered. Small sales are being made at $23 to $24 for delivery within 60 days. Some consumers are urging early shipment on old contracts.

Eastern Sales Small

Philadelphia, March 11.—It is understood that at least a portion of a tonnage of No. 2 foundry iron purchased by the H. B. Smith Co., Westfield, Mass., was placed with eastern furnaces. The buyer was inquiring for 8000 tons. Otherwise pig iron business here is confined to scattered lots, comprising relatively a small total. Prices are somewhat easier. Foundry iron is nominal at $22.50 to $23, base eastern furnace, but some exceptional business went at less. Anything under $22.50 does not appear to be a general market factor. A round tonnage of English copper-free low phosphorus iron in stock here has been sold. The market for this English iron is $26 to $26.50, duty paid, dock. Nearly 2000 tons of copper-bearing low phosphorus iron sold in the past week at $27. More than 2500 tons of Virginia foundry was sold. While some went at $25, furnace, for No. 2 plain, the Virginia market is closer to $26, base furnace. It is understood at least 25,000 more basic iron was placed in the recent pig iron buying movement than reported at the time.

Prices Present and Past

Representative market figures yesterday, and for last month, three months ago and one year ago

	Mar. 12, 1924	Feb., 1924	Dec., 1923	Mar., 1923
PIG IRON				
Bessemer, valley del., Pitts....	$24.76	25.01	24.17	31.67
Basic, valley	22.00	22.00	20.50	29.80
Basic, eastern del., eastern Pa...	22.50	22.50	23.30	29.35
*No. 2 foundry, del. Pitts.....	24.76	24.76	23.77	31.37
*No. 2 foundry, Chicago.....	24.50	24.40	23.00	31.25
*Southern No. 2, Birmingham...	23.00	23.00	20.75	26.50
*Southern Ohio, No. 2, Ironton.	23.50	24.00	22.50	30.75
**No. 2X, Virginia furnace.....	26.00	26.50	24.50	28.25
**No. 2X, eastern del., Phila..	24.13	24.26	24.26	32.00
Malleable, valley	22.50	23.00	21.50	29.20
Malleable, Chicago	24.50	24.40	23.00	31.25
Lake Superior charcoal, Chicago	29.04	29.04	29.04	35.55
Gray forge, val., del. Pittsburgh	24.26	24.61	23.27	30.77
Ferromanganese, del., Pitts.....	112.29	112.29	113.79	120.79
SEMIFINISHED MATERIAL				
Sheet bars, bessemer, Pittsburgh.	42.50	42.50	42.50	44.50
Sheet bars, open-hearth, Pitts....	42.50	42.50	42.50	44.50
Billets, bessemer, Pittsburgh.....	40.00	40.00	40.35	44.50
Billets, open-hearth, Pittsburgh..	40.00	40.00	40.35	44.50
FINISHED MATERIAL				
Steel bars, Pittsburgh.....	2.40	2.40	2.40	2.30
Steel bars, Chicago	2.50	2.50	2.50	2.34
Steel bars, Philadelphia.....	2.67	2.72	2.72	2.705

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

	Mar. 12, 1924	Feb., 1924	Dec., 1923	Mar., 1923
FINISHED MATERIAL (Continued)				
Iron bars, Philadelphia.....	$2.57	2.57	2.62	2.705
Iron bars, Chicago mills.....	2.40	2.40	2.40	2.53
Beams, Pittsburgh.....	2.50	2.50	2.50	2.35
Beams, Philadelphia	2.62	2.62	2.72	2.77
Beams, Chicago	2.60	2.60	2.60	2.44
Tank plates, Pittsburgh.....	2.40	2.45	2.50	2.35
Tank plates, Philadelphia.....	2.62	2.57	2.72	2.77
Tank plates, Chicago.....	2.60	2.60	2.60	2.44
Sheets, blk., No. 28, Pittsburgh.	3.75	3.75	3.75	3.55
Sheets, blue anl., No. 10, Pitts.	3.00	2.90	2.95	2.70
Sheets, galv., No. 28, Pittsburgh	4.90	4.90	4.90	4.65
Wire nails, Pittsburgh.....	3.00	3.00	3.00	2.90
COKE				
Connellsville furnace	4.00	4.00	3.85	7.15
Connellsville foundry, ovens....	5.00	4.80	4.80	8.15
OLD MATERIAL				
Heavy melting steel, Pittsburgh	20.00	21.60	18.35	26.10
Heavy melting steel, eastern Pa.	17.00	18.95	16.80	24.85
Heavy melting steel, Chicago...	17.00	18.00	16.00	23.15
No. 1 wrought, eastern Pa.	19.00	21.40	19.00	27.60
No. 1 wrought, Chicago.....	16.50	17.50	16.35	23.25
Rails for rolling, Chicago.....	20.00	20.00	17.05	24.90

Composite Market Average

Representing the Combined Average Prices Per Ton of Fourteen Leading Iron and Steel Products Yesterday, One Week, One Month, Three Months, One Year and Ten Years Ago.

Mar. 12, 1924	Mar. 5, 1924	Feb., 1924	Dec., 1923	Mar., 1923	Mar., 1914
$43.27	$43.29	$43.49	$43.02	$45.31	$23.60

Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

Iron and Steel Prices

SCRAP PRICES.. PAGE 758; WAREHOUSE, PAGE 754; ORE, NUTS, BOLTS AND RIVETS AND PIPE PRICES, PAGE 756

Pig Iron

Prices per gross ton

Bessemer, valley	$23.00 to 23.50
Bessemer, Pittsburgh	24.76 to 25.26
Basic, valley	22.00
Basic, Pittsburgh	23.76
Basic, Buffalo	23.00
Basic, del., eastern Pa.	21.50 to 22.75
Malleable, valley	22.50
Malleable, Pittsburgh	24.26
Malleable, Chicago	24.50
Malleable, Buffalo	22.00
Malleable, del., eastern Pa.	24.00 to 24.50

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X East'n and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 to 3.25
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern del., Phila.	24.63 to 24.76
No. 1X, Buffalo	22.50 to 23.50
No. 2 foundry, valley	23.00 to 23.25
No. 2 foundry, Pittsburgh	24.76 to 25.01
No. 2 foundry, Buffalo	22.00
No. 2 foundry, Chicago	24.50
No. 2 foundry, Granite City	25.50 to 26.00
No. 2 foundry, Ironton fur.	23.50 to 24.00
No. 2 foundry, Cleveland, del.	24.50
No. 2 foundry, del., Phila.	23.63 to 23.76
No. 2 foundry, N. J. tidewater	24.13
No. 2X, eastern del., Phila.	24.13 to 24.26
No. 2X, east, N. J. tidewater	24.63
No. 2X, eastern del., Boston	26.15 to 27.15
No. 2X foundry, Buffalo fur.	22.00 to 22.50
No. 2X, Buffalo, del. Boston	26.91 to 27.91
No. 2 southern, Birmingham	22.50 to 23.00
No. 2 southern, Cincinnati	26.55 to 27.05
No. 2 southern, Philadelphia	30.80 to 31.30
No. 2 southern, Chicago	29.01 to 29.51
No. 2 southern, Cleveland	29.01 to 29.51
No. 2 southern, Boston (rail and water)	29.91 to 30.41
No. 2 southern, St. Louis	28.17 to 28.67
No. 2X, Virginia furnace	25.50 to 26.50
No. 2X, Virginia, Phila.	30.17 to 31.17
No. 2X, Virginia, Jersey City	31.04 to 32.04
No. 2X, Virginia, Boston	31.42 to 32.42
Gray forge, eastern Pa.	22.50
Gray forge, val. del., Pitts.	24.26
Low phos., standard, valley	29.00
Low phos., standard, Phila.	nominal
Low phos., Lebanon, furnace	27.00
†Low phos., English, Phila.	26.76 to 27.76
Charcoal, Birmingham	33.00
Charcoal, Superior, Chicago	29.04

Silvery Iron

Jackson County, Ohio, furnace

7 to 8 per cent	32.00
8 to 9 per cent	33.50
9 to 10 per cent	35.50
10 to 11 per cent	37.50
11 to 12 per cent	40.00
12 per cent	42.50

Bessemer Ferrosilicon

Jackson County, Ohio, furnace

10 to 11 per cent	42.50
11 to 12 per cent	45.00
12 to 13 per cent	47.50

Ferroalloys

†Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resale	107.50
Ferromanganese, delivered, Pittsburgh	112.29
Spiegeleisen 19 to 21 per cent furnace or tidewater	38.00 to 40.00
†Spiegeleisen, English, delivered tidewater	36.00 to 38.00
Ferrosilicon, 50 per cent contract freight allowed	75.00
Ferrotungsten standard, cents per pound contained	85.00 to 95.00
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, cents per pound contained, delivered	10.00 to 10.25
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	$3.50 to $4.00
Ferro carbon-titanium, carloads, producer's plant, per net ton	$200.00

†Duty paid.

Coke

Beehive, Ovens

Prices per net ton

Connellsville furnace	$4.00 to 4.40
Connellsville foundry	5.00 to 5.75
New River foundry	10.50 to 11.00
Wise county furnace	4.50 to 5.00
Wise county foundry	5.00 to 6.00
Alabama furnace	5.00 to 6.00
Alabama foundry	5.50 to 6.50

By-Product

Foundry, Newark, N. J., del.	$10.91
Foundry, Chicago, ovens	12.50
Foundry, Boston, delivered	12.50
Foundry, St. Louis	12.50
Foundry, Granite City, Ill.	12.50
Foundry, Alabama	5.00 to 6.50

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch base

Open-hearth, Pittsburgh	$40.00
Open-hearth, Youngstown	40.00
Open-hearth, Philadelphia	44.17 to 45.17
Bessemer, Pittsburgh	40.00
Bessemer, Youngstown	40.00
Forging, Pittsburgh	45.00
Forging, Philadelphia	49.17 to 50.17

SHEET BARS

Open-hearth, Pittsburgh	$42.50
Open-hearth, Youngstown	42.50
Bessemer, Pittsburgh	42.50
Bessemer, Youngstown	42.50

SLABS

Pittsburgh	$40.00 to 41.50
Youngstown	40.00 to 41.50

WIRE RODS

¼-inch and finer

Wire rods, Pittsburgh	$51.00

Standard extras, $2.50 per ton over ¼-inch; $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp, Pittsburgh	2.35c to 2.50c
Universal skelp, Pittsburgh	2.35c to 2.50c
Sheared skelp, Pittsburgh	2.35c to 2.50c

Shapes, Plates and Bars

Prices per pound

Structural shapes, Pittsburgh	2.40c to 2.50c
Structural shapes, Phila.	2.57c to 2.82c
Structural shapes, New York	2.59c to 2.84c
Structural shapes, Chicago	2.60c
Tank plates, Pittsburgh	2.35c to 2.50c
Tank plates, Philadelphia	2.57c to 2.82c
Tank plates, New York	2.59c to 2.84c
Tank plates, Chicago	2.60c
Bars, soft steel, Pittsburgh	2.40c
Bars for cold finishing, Pitts.	2.55c
Bars, soft steel, Philadelphia	2.62c to 2.72c
Bars, soft steel, New York	2.64c to 2.74c
Bars, soft steel, Chicago	2.50c
Bars, refined iron, Pittsburgh	3.25c to 5.00c
Bars, rail steel, Chicago	2.30c to 2.33c
Bars, rail steel, mill	2.10c to 2.20c
Reinforcing bars, billet, Pitts.	2.30c to 2.40c
Bar iron, common, Phila.	2.57c
Bar iron, common, New York	2.59c
Bar iron, common, Chicago	2.40c
Bars, forging quality, Pitts.	2.65c

Hoops, Bands, Shafting

Prices per pound

Hoops, Pittsburgh, under 5 in.	3.00c
Hoops, Pittsburgh, 20 gage, under 1 in.	3.35c to 3.50c
Bands, Pittsburgh	3.00c
Cold finished steel bars, Pittsburgh base, carloads	3.00c
Cold-finished steel bars, base Pittsburgh, less carloads	3.25c
Steel shafting, Pittsburgh	3.00c
Cotton ties, bundle 45 lb. Pittsburgh	$1.69

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-hearth rails, mill	43.00
Relaying rails, St. Louis	27.00 to 32.50
Relaying rails, Pittsburgh	30.00 to 34.00
Light rails, 25 to 45, mill	2.00c to 2.15c
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	3.05c to 3.15c
Spikes, small railroad, Pitts.	3.25c to 3.50c
Spikes, boat and barge, Pitts.	3.50c
Spikes, railroad, Chicago	3.10c
Track bolts, Pitts. Standard	4.00c
Track bolts, Pitts., small	4.75c to 5.00c
Track bolts, Chicago	4.10c
Tie plates, Pittsburgh	2.55c to 2.60c
Tie plates, Chicago	2.60c

Spike, tie plate and truck bolt prices for carlots.

Wire Products

To Jobbers in Carloads

Prices per pound

Wire nails, Pittsburgh	3.00c
Galv'd nails, 1-inch and over	5.25c
Plain wire, Pittsburgh	2.75c
Annealed wire, Pittsburgh	2.90c
Galvanized wire, No. 9 gage, Pittsburgh	3.35c
Barbed wire, painted, Pitts.	3.45c
Barbed wire, galv., Pitts.	3.80c
Polished staples, Pittsburgh	3.45c
Galvanized staples, Pittsburgh	3.80c
Coated nails, count keg, Pittsburgh	2.60c to 2.70c
Woven wire fencing (retailers)	65 off
Woven wire fencing (jobbers)	67½ off

Chain, Piling, Strip Steel

Prices per pound

Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.55c
Hot rolled strip steel, Pittsburgh stamping quality	2.90c to 3.00c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, 0.100-inch and heavier, base	4.75c to 5.00c

Sheets

SHEET MILL BLACK

Prices per pound

No. 28, open-hearth, Pitts.	3.75c to 3.85c
No. 28, bessemer, Pitts.	3.75c to 3.85c
No. 28, open-hearth, Phila.	3.97c to 4.17c
No. 28, open-hearth, Chicago	4.09c to 4.19c

TIN MILL, BLACK

No. 28, open-hearth, Pitts.	3.75c to 3.85c

GALVANIZED

No. 28, open-hearth, Pitts.	4.90c to 5.00c
No. 28 bessemer, Pittsburgh	4.90c to 5.00c
No. 28, open-hearth, Phila.	5.22c to 5.32c
No. 28, open-hearth, Chicago	5.19c to 5.34c

BLUE ANNEALED

No. 10, open hearth, Pitts.	3.00c
No. 10 bessemer, Pittsburgh	3.00c
No. 10, open-hearth, Phila.	3.22c to 3.32c
No. 10, open-hearth, Chicago	3.34c

AUTOMOBILE SHEETS

No. 22 Pittsburgh	5.35c

Tin Plate

Prices per 100-pound box

Tin plate, coke base, Pitts.	$5.50

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	62	50½
1 to 1½-inch, butt iron	30	13

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional

Steel 3¼ to 3¾-inch	38½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled, 3½ to 3¾-inch	35

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Four-inch, Chicago	$61.20 to 62.20
Six-inch and over, Chicago	57.20 to 58.20
Four-inch, Birmingham	52.00 to 53.00
Six-inch and over, Birmingham	48.00 to 49.00
Four-inch, New York	65.60 to 66.60
Six-inch and over, New York	60.60 to 61.60

Standard fittings, Birmingham, base..$110.00

6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B.

Weak Demand for Scrap

Consumers Not Anxious To Buy, Though Production Calls for Much Material—Further Declines in Prices General

SCRAP PRICES, PAGE 758

Chicago, March 11.—Activity in iron and steel scrap last week was lowest in several months but the market has lost some of its rampant bearishness. Some grades have receded further, from the momentum of the about-face of 10 days ago, but more factors of strength are discernible. Most dealers are slow to sell. The Illinois Central realized good prices for scrap sold last week, railroad malleable bringing $22.10, delivered. Consumption of scrap is heavy, and with the Wisconsin Steel Co. lighting its open hearths another outlet is provided. Some interests believe scrap is now subsiding to a level more consonant with the present price of pig iron and that the recent fall in prices is not indicative of weakness. Heavy melting steel is marked at $17 to $17.50, with other prices in sympathy. Railroad offerings include 3000 tons by the Santa Fe, 2200 by the Northern Pacific, 1800 by the Canadian National, 550 by the Wheeling & Lake Erie, and 250 by the Soo line.

Worcester Mill Buys Steel

Boston, March 11.—Slight improvement is seen in iron and steel scrap although many grades continue dull. Some impetus has been given heavy melting steel by buying of the American Steel & Wire Co. for its Worcester, Mass., plant. This buyer is understood to have paid $16.50, delivered, for No. 1 railroad steel and dealers in Boston have offered $14 against this business. Heretofore, $12.50 and $13 represented the going market for heavy steel for shipment to eastern Pennsylvania. Pipe is dull. Chemical borings have been in fair demand from New Jersey with price firm at $13, shipping point.

Lower Prices at New York

New York, March 11.—While demand is still restricted, supplies of scrap are coming out less freely. Prices as a result are showing less weakness, although three grades, including heavy melting steel have again been reduced. Dealers are now offering to buy heavy melting steel at $13 to $13.50, New York, and No. 1 railroad steel at $13.25 to $13.75. Shafting is now holding at $18.50 to $19.

Mostly Dealer Trading

Philadelphia, March 11.—Trading in iron and steel scrap is mostly between dealers for account of contracts. Buying by consumers is confined to small lots scattered as to destination. Prices have a downward tendency and the future appears uncertain. For this reason dealers are not inclined to accumulate tonnage at yards.

Quiet at Pittsburgh

Pittsburgh, March 11.—Occasional activity is noted in the scrap market but for the most part users are disinclined to purchase. The Monessen, Pa., embargo continues for two weeks but the Weirton, W. Va., and the Vandegrift, Pa., embargoes were lifted last week. Since a Steubenville, O. user bought more than 10,000 tons of heavy melting steel at $21 and a Canton, O., consumer paid the same figure for a smaller tonnage, a nearby melter has purchased about 5000 tons at $20, following a smaller tonnage bought at $20.50. This consumer now will not offer more than $20, so for the time being the market remains quotable at $20 to $20.50. Rails for rolling are scarce and cannot be purchased at less than $22.50 to $23. Dealers cannot realize today more than $21.50 to $22 for specialties. A small tonnage of heavy breakable cast has been moved at $18.50. Sheet scrap, bundled and hydraulic compressed, is slightly weaker, declines of 50 cents being marked, as well as in sheet bar crops, axle turnings and machine shop turnings. For shovel turnings $16 still is offered here and the grade is unchanged at $15.50 to $16. The Apollo Steel Co. took bids yesterday on about 600 tons of hydraulic compressed sheets. Some of the Pennsylvania railroad's scrap on its offering March 4, came into this territory at relatively high figures.

Little Buying at Cleveland

Cleveland, March 11.—Scrap buying here continues limited, most of the activity being among dealers, consumers confining their negotiations to quiet purchases to meet spot needs. Prices, while unchanged from last week's levels, are soft.

Weaker at Buffalo

Buffalo, March 11.—The market is a little weaker. The going price on heavy melting steel is $18.50 to $19, though some has sold in small lots for as low as $17. Busheling, No. 1 is being offered at $15 to $15.50 and blast furnace scrap can be had for $14.25 to $14.50 One mill bought several thousand tons of this material at these prices. Removal of embar-

(*Continued on Page 713*)

Steel Needs Are Covered

Large Users Close for Second Quarter Tonnages—Open Market Sales Made at $42.50 for Sheet Bars, $40 for Billets and Slabs

SEMIFINISHED STEEL PRICES, PAGE 703

Pittsburgh, March 11.—While a few negotiations for semifinished steel for second quarter have been concluded, numerous conversion mills have not protected themselves on their sheet bar, billet and slab supplies for that period. Some whose consumption of sheet bars and other semifinished material has been heavier than anticipated for the first quarter, have had to buy additional supplies of about 1000 tons at a time and have paid $42.50, Pittsburgh or Youngstown.

While the general market on slabs is $40, Pittsburgh or Youngstown, as high as $41.50, Pittsburgh, has been obtained in the past week on a fair sized lot by a Mahoning valley mill. On 4 x 4-inch rerolling billets the $40, Pittsburgh or Youngstown, price appears to rule, and some arrangements are about to be concluded for second quarter requirements. Forging billet orders continue to be taken in lots of 200 or 300 tons at a time at $45, Pittsburgh or Youngstown.

Wire rod inquiries have been fairly numerous but purchases have been few since many of the wire rod producers need the material themselves or have their regular customers who will take all they can give them. Skelp is quoted from 2.35c to 2.50c and many of the tubular goods mills have nothing left for the open market after taking care of their own needs.

Close for Second Quarter

Cleveland, March 11.—Users of sheet bars, billets and slabs obtaining their supplies from the leading maker in this district have completed their arrangements for second quarter tonnages, and this interest is practically out of the market. The business closed with regular customers is taken on a basis of the going market at time of delivery. Nothing is available at less than $42.50 on sheet bars, and $40 on billets and slabs, and these prices have been done on business placed with valley makers this week.

Booking For Second Quarter

Youngstown, O., March 11.—Regular customers probably will be given the privilege sometime this week of arranging for their supply of semifinished material for next quarter. The price upon which all contracts for sheet bars will be based for the next three months will remain unchanged at $42.50, Youngstown, or Pittsburgh. The tonnage already placed has not assumed large proportions, but it is expected before the week ends, little tonnage will be available for the open market from one producer. The wire rod price of $51, Pittsburgh, also has been reaffirmed and some tonnage for April delivery has been sold against this figure.

Eastern Sales Moderate

Philadelphia, March 11.—Only moderate sales of billets were made in this district in the past week. These took the full prices of $40, Pittsburgh for rerolling and $45 for forging qual-

Strip Tonnage Fair

STRIP PRICES, PAGE 703

Pittsburgh, March 11.—Tonnage in hot and cold-rolled strip steel is coming in well, according to leading producers here. For one or two makers incoming orders have been more numerous the past two or three weeks although the total is not remarkable. Buyers are not specifying far into the future but

various consuming lines are active in buying as needed. Operations are maintained at about 80 per cent of capacity and at present demand is evenly divided between hot and cold. The latter is quotable at 4.75c to 5.00c, base Pittsburgh, since some particularly attractive orders have again been taken at that minimum. The largest number of commitments however are said to be at 5.00c base Pittsburgh. Hot strips are quoted at 2.90c to 3.00c base Pittsburgh although some makers will not go below the maximum figure.

Warehouses Adjust Cold-Finished Extras

WAREHOUSE PRICES, PAGE 754

New York, March 11.—Iron and steel jobbers have established new extras on cold-finished steel, this being predicated on the advance in hot-rolled bars last July. The price situation otherwise is featureless, with demand continuing active in virtually all lines. As the case for some time, plates are moving less actively than probably any of the other leading items.

Demand Well Maintained

Philadelphia, March 11.—Iron and steel jobbers report that demand is well maintained with prices unchanged.

Demand Is Quieter

Cleveland, March 11.—Demand for iron and steel products out of warehouse is quieter with fewer large tonnage sales being made. There is no tendency to buy ahead as existed in January and early in February. Most sales now are for present needs. No increased buying by builders is noted. Prices are firm with most dealers having put into effect the adjustment on cold-finished steel.

Bar Buying Increasing

Detroit, March 11.—Buying of steel bars in the warehouse trade shows a broadening tendency as consumers are unable to get prompt shipments from mills. Buying of bars in the past week has been the heaviest of the year. The movement of structural shapes and galvanized sheets also continues liberal. In the miscellaneous lines buying is more active than it was 30 days ago. Prices are holding steady with some firmness in certain lines.

Hysteria Slows Business, Schwab Tells Coolidge

Cleveland, March 11.—Public "hysteria" over the oil investigations, and uncertainty with respect to the administrations' tax program are holding up business expansion, Charles M. Schwab, chairman of the Bethlehem Steel Corp., told President Coolidge during an informal visit today. Mr. Schwab said conditions in the steel industry are sound, and general business is prosperous, though it could be made more so, if the political situation is composed. Mr. Schwab returned recently after spending seven weeks in Germany, France and Austria.

Jackson Iron & Steel Co., Jackson, O., has increased its capital stock from $300,000 to $1,000,000.

Coke Market Is Weaker

Furnace and Foundry Demand Slackens, while Gas Producers Place Good Contracts; Wage Cut May Affect Connellsville Production

COKE PRICES, PAGE 703

Pittsburgh, March 11.—The outstanding feature in the coke market is the increased number of inquiries from eastern gas companies. One is for 5000 tons monthly for this year and another is for 4500 tons monthly for three months. Others want large amounts. The Detroit City Gas Co. wants 8000 tons over the second quarter. A Boston inquiry is for 110,000 to 120,000 tons. Middle interests in Boston and Philadelphia also are circulating inquiries originating with gas producers. Some are taking alternate bids on standard furnace and medium sulphur coke. One thousand tons of the latter grade were sold at $3.75, as a sample, and may be followed by 5000 tons additional. The Mond Nickel Co. purchased 5000 tons of medium sulphur coke for March and April delivery at $3.40. The minimum quotation on that grade is $3.25. Blast furnace inquiries are scarce, pig iron producers maintaining a waiting attitude. Spot standard coke is slightly weaker and $4 again is available, while $4.25 is quoted in some directions and $4.40 still is the maximum contract quotation. Consumers expect the contract price to soften and are delaying purchases. They may buy on a monthly basis. Standard foundry coke orders are scarce. Users are absorbing backlogs collected prior to the Jacksonville coal conference. From $5 to $5.50 is quoted on spot tonnage instead of $5 to $5.75, although the latter still is quoted on a contract basis.

Coke production may be curtailed by minor wage declines, reported already in effect at plants throughout the Connellsville region. Production of Connellsville coke for the week ended March 1 was 232,290 tons, compared with 212,790 tons the preceding week, according to the *Connellsville Courier*.

Low Prices Disappear

New York, March 11.—The coke market is substantially unchanged although some low prices that prevailed in certain quarters have disappeared. On beehive foundry coke for spot shipment the market now is quoted at $5.50 to $5.75, with higher prices for special brands. On by-product foundry coke the market continues $10.91, delivered to Newark and other northern New Jersey consuming points.

Spot Foundry Sales Active

Cincinnati, March 11.—Business in spot foundry coke is well maintained. Prices range from $5 to $5.75, Connellsville, although less than $5 is not exceptional. Small sales of New River and Wise country foundry coke are more numerous. Prices on New River foundry coke range from $10.50 to $11, ovens, while the Wise county grade is quoted at $5 to $6 ovens. A reduction of $1.25 a ton is noted on Pocahontas furnace coke, while the foundry grade has been reduced from $8 to $7, ovens. The Louisville & Nashville railroad is inquiring for 750 tons of Wise county foundry coke for second quarter. The market for furnace coke is quiet.

Foundry Stocks Light

St. Louis, March 11.—Coke buying continues on a hand-to-mouth basis. Stock piles in foundry yards are light, and there have been fair inquiries for second quarter requirements. Demand centers almost exclusively in by-product coke. By-product ovens serving the foundry trade report a good backlog of orders, one interest having disposed of its remaining output for the first quarter. Prices are unchanged.

Southern Market Unchanged

Birmingham, Ala., March 11.—The southern coke market is unchanged from a week ago. Prices range between $5 and $6.50. A little inquiry is being received from outside this district.

Tin Plate Steady

Prices Well Stabilized, and Demand Continues Strong

TIN PLATE PRICES, PAGE 703

Pittsburgh, March 11.—Tin plate prices are well stabilized, and demand is steady. Most of the demand has been anticipated and users are well protected so that few new inquiries are coming out. The largest canmakers have covered their needs for months. Specifications for May are due this week. Mill operations are high, the average being in excess of 95 per cent. Two or three independents are operating full, and others are operating as near to 100 per cent as possible. Shipments are heavy since most of the canmakers desire to have all the tin plate possible on hand when it is needed. All through the winter there has been little interference due to transportation difficulties. The open market figure on tin plate is unchanged at $5.50 per base box of 100 pounds, Pittsburgh.

Specifications Satisfactory

Youngstown, O., March 11.—District operation of b'ack plate mills continues at 90 per cent of capacity. Specifications for second quarter requirements against contracts are being issued at a satisfactory rate, and while open rollings still exist comfortable schedules are assured well into the second quarter. Producers continue to quote $5.50 per base box, Pittsburgh.

Additional Tonnage Available

Philadelphia, March 11.—Due to forced tin plate production some mills have made shipments on contracts to an extent which enables them to find space for some additional second quarter tonnage. Some consumers in this district have not vet closed for this position, so no difficulty is anticipated in getting sufficient business.

Bar Buying Is Growing

Second Quarter Contracting Goes Forward at Level Price—Bookings Promise to Equal First Period—Specifications Are Heavy

BAR PRICES, PAGE 703

Pittsburgh, March 11.—Second quarter contracting for merchant steel bars is being done by some regular customers producers in this territory. These are all at 2.40c base Pittsburgh, that figure being much firmer than 2.50c on plates or shapes. These contracts invove 1000 tons or more at a time and since specifications for this quarter are full, expectation is that second quarter commitments will be fully absorbed. Many bar mills are being operated full although a few bar producers are operating at about 80 per cent of capacity.

The refined iron bar market has witnessed some improvement, due to demand from railroads and railroad equipment builders. The 3.25c figure is slightly firmer and up to 5.00c again is quoted.

New England Sales Heavy

Boston, March 11.—Demand for merchant steel bars which was fair a week ago, has nearly doubled during the past week and strength of the market is shown by the fact that several thousand tons for second quarter delivery have been placed at 2.40c, Pittsburgh.

Competition Is Keener

Philadelphia, March 11.—Steel bar makers are competing more sharply for business. Attractive orders for commercial bars were booked last week at 2.35c, Pittsburgh, and buyers say that this price was done by the large makers. Anything under 2.40c, Pittsburgh, is exceptional. The tendency continues to be to buy only for nearby requirements. One small eastern mill has quoted 2.30c, Pittsburgh, on one lot of commercial bars but this is not regarded as a real factor in the market Concrete bars now are quoted at 2.30c to 2.40c, Pittsburgh, with 2.25c, being the exception.

Parts Makers Place Tonnage

Cleveland, March 11.—Several new orders of large size together with some specifications of similar extent, principally from the automotive parts manufacturers, has brought out more tonnage in the steel bar market in this territory the past week. With the exception of a limited number of such transactions, however, the market has developed comparatively little new business and the run of buying is quieter. One manufacturer of spring steel in northern Ohio closed in the week for approximately 2500 tons for prompt shipment. Some mills were unable to bid upon this business for the reason that they are filled upon spring steel for weeks ahead. One maker is sold up for at least two months. A manufacturer of railroad specialties in northern Ohio territory also was the buyer of 2000 to 2500 tons of bars for early delivery. Some of the nut, bolt and rivet manufacturers are taking better shipments from the mills. Deliveries of steel bars by the mills are little changed and although some sizes and forms are deferred, apparently buyers are able to obtain satisfactory shipments without trouble. Prices are well maintained at 2.40c, Pittsburgh.

Specifications Are Increased

Chicago, March 11.—Makers of soft steel bars state many buyers seek to add to their commitments. Specifications continue heavy, and bars still lead other lines of finished steel in point of activity. Except for the Ford Motor Co., leading western automobile manufacturers are enlarging their schedules. Railroad freight car builders in the past week have placed and inquired for more tonnage than in several weeks. Of cars placed within the past 10 days, fully 40 per cent, requiring 60,000 tons of plates, shapes and bars, have been placed with Chicago district builders. Implement manufacturers are decreased factors, but more because they placed their immediate requirements early in the year. Both leading makers of soft steel bars in this district are committed well ahead. Steel bars continue at 2.50c, Chicago.

Rail steel bar mills have not yet felt the overflow of business from the steel mills. One mill is on double turn, others on single. The quotation is unchanged at 2.30c, mill or 2.30c to 2.33c, Chicago.

Single turn still prevails in bar iron mills, and at times business coming in is hardly sufficient to warrant this. The price is 2.40c, Chicago.

Cold-Drawn Extras Apply

Pittsburgh, March 11.— Orders for cold-drawn steel bars taken since yesterday have been subjected to the new card of extras issued by makers, effective this week. Fair business is going but during the past week or two the aggregate has fallen off. Some less-than-carload business has been done at the regular differential of $5 per ton over the carload base of 3.00c, Pittsburgh. Freight rates are being equalized in territories reached by Chicago producers naming 3.00c, Chicago. Some orders from automotive and allied lines have been taken for fair tonnages and a few from building hardware and railroad equipment manufacturers. Small specifications continue to come from machine screw products makers.

Bolt, Nut, Rivet Shading Is Continued

NUT AND BOLT PRICES, PAGE 756

Pittsburgh, March 11.—Quietness is more decided in nuts, bolts and rivets and in rivets competition is decidedly keen. Some prices below 2.75c base Pittsburgh, have appeared on single carload orders. Several inquiries from jobbers for single carloads are pending as well as one or two from users. In nuts and bolts the quotable market still is unchanged on the basis of 60 and 5 off for large machine bolts but this is more or less nominal. Only small orders are being taken and buyers are purchasing from hand-to-mouth.

To Announce Second Quarter Price

Philadelphia, March 11.—Eastern makers of nuts and bolts are to announce their second quarter nut and bolt prices this week. It is expected that the present level will be reaffirmed. Current specifications are fair but in view of the price situation consumers are not showing much anxiety about taking all the tonnage due them. Rivets are nominal at 2.75c to 2.90c, Pittsburgh. The demand is composed of small lots which are not testing the market price.

Fair Order Volume

Cleveland, March 11.—A steady flow of small business continues to come to bolt and nut manufacturers and the total represents a good volume demand. Prices are firm and no shading is reported. Second quarter books are expected to be opened shortly.

Spot rivet buying is practically nil and specifications on contracts are only of fair size. However, the 2.75c base Pittsburgh price on large rivets is fairly firm although a large inquiry undoubtedly would develop a lower quotation. Small rivet prices are weak. It is expected rivet manufacturers will begin booking second quarter business within a few days.

To Open Second Quarter

Chicago, March 11.—Makers of bolts and nuts are about to begin booking second quarter business, and probably at the present level of 60 and 10 off for large machine bolts. Difficulty has been encountered in trying to establish the 60 and 5 off basis. Specifications are fair. Automobile consumption is good, all leading makers but one maintaining good schedules. Implement manufacturers are not buying, apparently having covered their immediate needs Jan. 1.

Improved Inquiry

Is Shown for Ferromanganese With More Sales—Chrome Ore Sold

FERROALLOY PRICES, PAGE 703

New York, March 11.—At least 2000 tons of ferromanganese have been sold during the past week. All of this was English metal and brought $107.50, duty paid, tidewater. Inquiry for ferromanganese is somewhat improved, but generally is restricted to prompt shipment and there is very little interest in forward requirements. No German ferromanganese apparently has been sold. This recently was offered at $105, duty paid, tidewater.

Sales of spiegeleisen have been small during the past week, but inquiries are somewhat more numerous aggregating about 1500 tons. There is a general disposition to buy only for prompt shipment and to avoid covering ahead.

A sale of 1500 tons of Indian chrome ore, 47 to 50 per cent, was made this week at $19 a long ton, c.i.f. Atlantic port, for April-May shipment from India. Prices of ores and alloys are unchanged. The tungsten market is maintaining a firm tone at its new price levels of $8.75 a short ton unit for average wolframite and

88 to 93 cents a pound contained for ferrotungsten. Ferrosilicon and ferrochrome specifications continue at a high rate, the large shipments reflecting the present volume of automotive alloy steel and general steel production.

Partially Cover Future Needs

Pittsburgh, March 11.—Small lot purchases of practically all products featured the ferroalloy market this past week. In ferromanganese some additional third quarter purchases for a total of about 900 tons have been made during the past few days. One or two orders for 100 or 200 tons for May-June shipments are noted at $107.50 c.i.f. Atlantic seaboard, duty paid. The Pressed Steel Car Co. bought 50 tons of English material at $107.50 seaboard. Users in various sections are specifying liberally and apparently in some cases, the present consuming rates are heavier than figured upon for this period. Because of the high costs of production, the scarcity of ore, etc., both domestic and English makers are less inclined to obligate themselves far into the future at the $107.50 seaboard base level. Importers are talking of a possible early advance of at least $2.50 per ton.

Spiegeleisen is dull. One sale of 50 tons is noted in this district. Prices are unchanged at $38 to $40 for high grade and $37 to $39 for 16 to 19 per cent. Some less-than-carload lots of 50 per cent ferrosilicon are wanted and one or two single carloads. On the latter $75 freight allowed, is quoted. The Allegheny Steel Co. wanted 200 tons of 75 per cent ferrosilicon but considered $140 too high. Small 2000-pound lots of electric furnace ferrovanadium are bringing $3.75; certain low grade open-hearth material is available at $3.50. Ferrotungsten appears to be a trifle stronger although some high grade still is available at 95 cents.

Chicago Market Inactive

Chicago, March 11.—The ferroalloy market is inactive in this territory. Ferromanganese is unchanged at $107.50, seaboard. Foreign spiegel is offered at $36, tidewater, and domestic at $39 to $40, furnace or tidewater. With the exception of several sales of ferromanganese of 100 tons each, most business in ferroalloys is confined to carloads.

Hoop Concessions Made

HOOP PRICES, PAGE 703

Pittsburgh, March 11.—While the majority of makers of hoops and bands are quoting the open market figure of 3.00c, some concessions have appeared. These have been more numerous since demand has fallen off somewhat. The concession usually amounts to about $2 per ton. Regular hoops and bands are quotable at 2.90c to 3.00c, base Pittsburgh.

Fluorspar Selling Fair

New York, March 11.—Fair business continues to be done in foreign fluorspar, particularly from England and Italy and to some extent from Germany. The business is mostly with tidewater consumers and no sales are being made far inland. All this foreign fluorspar has 85 per cent or more calcium fluoride but in most cases the silica is more than 5 per cent. Prices range from $15 to $15.50 per gross ton, c.i.f. tidewater.

Plate Market Irregular

Placement of Large Prospective Tonnages Indefinite, and Weakness Persists in Spots—Eastern Sales Slightly Improved

PLATE PRICES, PAGE 703

Philadelphia, March 11.—Eastern plate mills continue to operate at 55 to 70 per cent of finishing capacity, on an average, and two more open-hearth furnaces have become active. Mills report that sales in the past week equaled the preceding week's tonnage, and in some cases there was a slight increase. Buying involves nearby requirements, very little for second quarter being placed. No outstanding tonnages are reported in this district. Prices continue at 2.25c to 2.40c, Pittsburgh, depending on attractiveness of the business.

Buyers Show Conservatism

Pittsburgh, March 11.—Conservatism is the general attitude of purchasers of heavy rolled steel products, particularly plates. Some second quarter plate contracts have been entered at 2.50c, Pittsburgh. Other fabricators who would contract are hesitating in the belief that weakness in other directions presages something of the same character in this vicinity, where the full 2.50c level is being quoted by mills. Prices made in other sections, particularly in the East, have gone at 2.35c, base Pittsburgh, and lower. While railroad car and locomotive work has been heavy, the aggregate is not sufficient to engage all plate capacity. Boiler shops have a fair amount of work ahead but storage tank builders, particularly builders of oil tanks, need considerable work. They are anticipating the placing of numerous lots of tanks in the early spring and summer.

To Supply Ship Steel

Cleveland, March 11.—For a new lake ore freighter for the Columbia Steamship Co., the contract for which has just been placed with the Great Lakes Engineering Works, the Carnegie Steel Co. will supply 5200 tons of steel, largely plates. The new vessel will be built at Detroit and will be ready for the 1925 shipping season. At least three other vessels requiring about 15,000 tons of steel are in various stages of negotiation with lake yards. General plate business continues quieter. Standard Oil interests in the week placed 10 stills requiring about 200 tons, still are taking bids on 30 to 40 additional involving perhaps 800 to 1000 tons. About 3000 tons of steel will be required for the rebuilding of 500 freight cars by the Baltimore & Ohio railroad, an inquiry for which has just been issued. Plate prices are weak with 2.40c, Pittsburgh, more readily obtainable. It is now reported that this price is applicable to even small lots whereas heretofore it has been made principally on tonnages of size.

Car Placements Heavier

Chicago, March 11.—Considerable business from freight car builders is in sight and makers of plates are more hopeful than in many weeks. Indefinite talk still is heard of the placement of large oil storage tanks. In the past week good, scattered merchant demand for plates has been noted. Last week's inquiries and bookings are taken to indicate a revival of activity in steel plates, which have lagged far behind bars and shapes. No outstanding business was booked but awakened interest is heartening. The plate price is 2.60c, Chicago.

Buy More Wire

Railroads Important Users of Nails—Orders Many But Small

WIRE PRICES, PAGE 703

Pittsburgh, March 11.—Numerous orders for wire products are being booked although individual lots are not large. Producers have collected fairly large backlogs and are operating approximately at a 75 per cent average basis. Sales of mixed carloads of nails, wire and fencing, with a few straight carloads of either nails or wire, are noted from time to time. Demand for smooth wire in the heavier gages has picked up considerably but woven wire fencing orders are not as large as was expected. No change has taken place in quotations, 2.75c base Pittsburgh for plain wire and 3.00c for wire nails. Cement-coated nails still can be had at 2.60c, or $2 per ton under the regular market level of 2.70c base Pittsburgh.

New England Takes Wire

Boston, March 11.—Despite quiet conditions in other parts of the country the wire market is active in New England. Wire plants are busy and in some cases eastern mills are having difficulty supplying wire rods. Nails are in exceptionally strong demand with prices firm at 3.00c, base Pittsburgh.

Railroad Business Good

Chicago, March 11.—Railroad freight car builders are providing makers of wire and wire products with good sized orders for nails, and the railroads themselves are coming forward for nails and barbed wire. Makers of wire look for good repeat orders for netting. Demand for manufacturing lines continues good. Impassable country roads are a factor in backward buying by farmers and this condition is carried back to the mills through jobbers. Operating schedules of makers are about 75 per cent.

Metal Plant Sold

Fairmont, W. Va., March 11.—The plant of West Virginia Metal Products Co., which was erected here just previous to Nov. 11, 1918 and which never was operated, has been sold to the bondholders for $500,000. The plant was erected at a cost of $2,000,000 and was ready to operate when the war ended. Attorney Charles F. Patterson of Pittsburgh represented the bondholders. Osman Swartz of New York, John Ricketson Jr., and A. L. Ashby, both of Pittsburgh, represented the bondholders' committee.

Reinforcing Bars Dull

Little New Business Coming Out—Two Texas Awards Involve 1650 Tons—Most Sales Are of Small Size—Weaker Prices in Evidence

REINFORCING BAR PRICES, PAGE 703

Pittsburgh, March 11.—Quietness generally reigns in the reinforcing concrete bar market. While the mill price remains unchanged at 2.40c, base Pittsburgh, a fabricator has raised his warehouse price to 2.60c, Pittsburgh. Numerous projects still are pending; awards this week are few, but will be more numerous now that several general contracts have been let. The Hughes-Foulkrod Co. received the general contract for a warehouse for Kaufman & Baer Co. involving about 1000 tons. The George A. Fuller Co., New York, received the general contract for the Union Bank & Trust Co. building, Huntington, W. Va., 125 tons. The Hebrew Institute building Pittsburgh, still is pending, 100 tons, as is about 1200 tons of concrete bars for Pennsylvania state road work which is to be closed March 17 on which 21 local contractors have placed bids. The latest inquiry before the trade is for 375 tons for an addition to the plant at Homewood, Pa., of Westinghouse Electric & Mfg. Co.; bids close March 13. The Cheat river power plant development of the West Penn Power Co., which was expected to take about 2000 tons, will only require about 300 tons. This will not be placed until fall.

Sales Are Dwindling

Cleveland, March 11.—Sales of concrete reinforcing bars have dwindled until few large tonnages are being awarded. No inquiries were brought out involving much over 50 to 75 tons each. One of the few awards last week was that of 100 tons for a waterworks in Lorain, O., to Paterson-Leitch Co. This company also took about 100 tons in several smaller lots. A considerable tonnage is expected to be needed for 733 miles of highways in Michigan, most of which will be constructed with reinforcing bars. Few concessions from the 2.75c, base Pittsburgh, price are noted in concrete bars out of warehouse. On new steel, 2.40c, Pittsburgh, is the going market, although a project involving several tons would be able to obtain 2.30c, Pittsburgh, the latter quotation not having entirely disappeared. Rail steel bars are quotable at 2.10c, mill with a slight strengthening tendency in that quotations below this figure are more difficult to obtain.

Less Estimating Being Done

Chicago, March 11.—Most concrete reinforcing bar warehouse interests find less new work coming before their estimating departments. This is blamed by various interests to a natural slowing up in post-war building, mill competition and general uncertainty arising from the proceedings at Washington. At the moment, shipments from the warehouses are fairly good, but the slowness of new business to flow in is causing some concern. The largest job closed last week was the 950-ton warehouse in Dallas, Tex., for the Missouri, Kansas & Texas railroad. Good business in lots approximating 50 tons is being done. The general warehouse quotation is 3.00c.

Unimportant Tonnages Closed

Cincinnati, March 11.—Relatively unimportant tonnages are for the most part involved in concrete bar transactions which have come to the closing point this week. The Ferro Concrete Construction Co. probably will furnish the 1200 tons required for the foundry addition to the Lunkenheimer Co., Elmwood, O. New steel bar prices are unchanged at 2.40c, base Pittsburgh. The bulk of the awards involve 50 to 100-ton lots.

Awards Suddenly Shrink

New York, March 11.—Concrete bar business in this territory has undergone a considerable shrinkage as compared with awards reported a week ago. Several lots are expected to be placed this week but these do not comprise a large total. Prices are unchanged. It is understood that 1500 tons for the Norfolk & Western railroad viaduct at Petersburg, Va., has been placed but it is not known who booked this business.

CONCRETE CONTRACTS PLACED

Awards this week	**3,825 tons**
Awards last week	**7,101 tons**
Awards two weeks ago	**8,550 tons**

1500 tons, viaduct at St. Petersburg, Fla., for Norfolk & Western railroad, reported placed.
950 tons, Missouri, Kansas & Texas railroad warehouse at Dallas, Tex., to Concrete Engineering Co.
700 tons, work for Missouri, Kansas & Texas railroad building at Dallas, Tex., to Texas Steel Co.
250 tons, Missouri bridge work, to Concrete Steel Co.
125 tons, Minneapolis waterworks, to C. A. P. Turner Co.
100 tons, waterworks at Lorain, O., to Paterson-Leitch Co.
100 tons, several projects in northern Ohio, to Paterson-Leitch Co.
100 tons, Methodist hospital, Fort Worth, Tex., to Texas Steel Co.

CONCRETE CONTRACTS PENDING

1200 tons, Pennsylvania state road work; bids close March 17.
1000 tons, warehouse for Kaufmann & Baer Co., Pittsburgh; general contract awarded the Hughes-Foulkrod Co.
500 tons, Stimson office building, Seattle; pending.
375 tons, addition to the plant at Homewood, Pa. of Westinghouse Electric & Mfg. Co.; bids close March 13.
150 tons, Bennett hall for University of Pennsylvania, Philadelphia; W. R. Dougherty, general contractor.
125 tons, building for Union Bank & Trust Co., Huntington, W. Va.; general contract awarded George A. Fuller Co.
100 tons, Hebrew Institute building, Pittsburgh; matter still in abeyance.

To Sell Furnace Plant

Philadelphia, March 11.—The plant of the American Manganese Mfg. Co., near Dunbar, Fayette county, will be offered at public auction March 31 by virtue of an order of the common pleas court of Philadelphia county. The sale will be conducted by David Halstead, receiver, in the offices of the company in the Bullitt building, Philadelphia. No bids will be considered for the properties of the company which total under $200,000.

The properties consist of a blast furnace plant, officers' and employes' dwellings, undivided one-half interest in by-product coke oven plant, sand stone quarry and mill, timberlands, railroads, coal properties, dams, reservoirs, machinery and equipment. The blast furnace plant consists of two furnaces of a nominal capacity of 250 pounds of pig iron a day. The timberlands consist of 2842 acres, estimated to contain 6,000,000 feet of saw timber. The dwellings consist of 150 officers' and employes' houses.

Expected Gain

In Oil Pipe Materializes—Larger Projects Out—Cast Demand Maintained

PIPE PRICES, PAGE 703 AND 750

Pittsburgh, March 11.—Several 3000 or 4000-ton orders for line pipe have reached the tubular goods mills in the Mahoning valley and Pittsburgh territories indicating that the expected improvement in oil country goods is under way. While all lapwelded capacity is not engaged, it is expected that it soon will be in the majority of the mills. Average operation of pipe furnace and pipe finishing capacity is above 90 per cent. The formal inquiry for the 715-mile, 12-inch pipe line for the McCorkle Pipe Line Co. to involve approximately 60,000 tons for a line from Oklahoma through Texas has not as yet been received but it is understood that negotiations are under way. The Pure Oil Co., Columbus, O., is receiving prices on three sizes of casings, about 6000 feet in each size, and other inquiries involving up to 12,000 feet of a size are fairly numerous. Orders for pipe for use in drilling wells, usually four to eight carloads at a time, are increasing and before the end of March or early in April deliveries of this product are expected to be deferred five to six weeks. Demand for full weight merchant pipe continues to be sustained at a high rate due to widespread building activity. The discount cards of last April still continue in force.

Place 12,000-Ton Award

New York, March 11.—Distribution of 12,000 tons of cast iron pipe has just been made by the department of water, gas and electricity. Bids on this tonnage were opened Jan. 31, and were noted in IRON TRADE REVIEW at the time, but action was held up. No announcement has yet been made of the award of 4000 tons of pipe, on which general contractors' bids were closed during the middle of February.

Larger Jobs Coming Out

Chicago, March 11.—The end of this week may see the award of 2800 tons upon which Montgomery county, O., has taken bids and 1600 tons upon which Royal Oak, Mich., is figuring. The former tonnage seems certain to go to the United States Cast Iron Pipe & Foundry Co. The city of Chicago takes bids, March 21, on 5400 tons, while the south park board of that city still is figuring on 700 to 800 tons. On the smaller sizes makers generally are booked three months ahead. In view of increasing firmness of pig iron in the South, cast

pipe prices are holding at $61.20 to $62.20 for 4-inch.

Market Holds Strength

Birmingham, Ala., March 10.—Cast iron pipe market holds its strength. Lettings for the past week were scattered widely. The pressure pipe makers are confident there will be no letup in the improvement in business and that summer activity is assured. The American Cast Iron Pipe Co. announces 1800 tons of new lettings for the past week.

Municipalities Active

San Francisco, March 8.—Municipalities in this district actively are seeking cast iron pipe tonnages and over 16,000 tons now is being figured. The largest inquiry in this lot is that of 5050 tons for Portland, Oreg., which is expected to be placed soon. Private demand is quiet. Only one award was reported, involving 191 tons for Los Angeles, which was obtained by a Belgian interest.

CAST IRON PIPE PLACED

12,000 tons, department of water, gas and electricity, New York, distributed as follows: 4000 tons, Warren Pipe & Foundry Co.; 4000 tons, United States Cast Iron Pipe & Foundry Co.; 3000 tons, Donaldson Iron Co.; and 1000 tons, R. D. Wood & Co.
1031 tons, work at Milbank, S. Dak., to American Cast Iron Pipe Co.
420 tons, work for Decatur, Ind., to American Cast Iron Pipe Co.
300 tons, Iowa City, Iowa, to National Cast Iron Pipe Co.
242 tons, work at Peoria, Ill., to American Cast Iron Pipe Co.
230 tons, Casper, Wyo., to unnamed maker.
191 tons, Los Angeles, obtained by a Belgian interest.
130 tons, Lincoln Water & Light Co., Lincoln, Nebr., to National Cast Iron Pipe Co.
125 tons, Hammond, Ind., to United States Cast Iron Pipe & Foundry Co.
102 tons, Tampico, Mexico, to American Cast Iron Pipe Co.

CAST IRON PIPE PENDING

5400 tons, Chicago; bids close March 21.
5050 tons, work for Portland, Oreg.; bids in.
225 tons, Manitowoc, Wis.; bids in March 14.
220 tons, Arkansas City, Kans.; bids in.
100 tons, Michigan City, Ind.; bids in March 24.
Tonnage unstated, Shidler, Okla.; $125,000 voted for water works extensions.

Sheet and Tin Mill Wage Rates Unchanged

Youngstown, O., March 11.—Wages of sheet and tin plate mill workers based on selling prices will remain unchanged for March and April, it was announced today. The average price of 26, 27 and 28 gage black sheets in January and February was 3.75c per pound, for the third consecutive bimonthly period, as shown by the following table. Wages of sheet and tin mill workers are 48 per cent above their respective bases. Following is a comparison of average sales prices, corresponding to the bimonthly periods on which changes in wage scales were applied:

March-April	3.75c	unchanged
January-February	3.75c	unchanged
November-December	3.75c	+ 1½ per cent
September-October	3.70c	+ 3 per cent
July-August	3.60c	+ 6 per cent
May-June	3.40c	+ 3 per cent
March-April	3.30c	unchanged
January-February, 1923	3.30	+ 3 per cent
November-December	3.20	+ 4½ per cent
September-October	3.05	+ 4½ per cent
July-August	2.90	+ 3 per cent
May-June	2.80	unchanged
March-April	2.80	unchanged
January-February, 1922	2.80	+ 1½ per cent
November-December	2.75	—10½ per cent
September-October	3.10	—15 per cent
July-August	3.85	— 3 per cent
May-June	3.95	—10½ per cent
March-April	4.30	—25½ per cent
January-February, 1921	5.15	—19½ per cent

Sheet Orders Are Larger

Box Car Contracts Sending Up March Bookings—Japanese Buyers Making Inquiries—Prices Show Less Shading

SHEET PRICES, PAGE 703

Pittsburgh, March 11.—Since all-steel box cars being ordered by the railroads require a trifle more than three tons of blue annealed sheets per car, recent orders of the Pennsylvania and other railroads are sending up March bookings of sheet-makers to high totals. The Pennsylvania's orders for 8000 cars distributed among four makers, call for approximately 25,000 tons of blue annealed sheets, most of which have been ordered from large sheet interests here. The New York Central railroad's car order involved several thousand tons of galvanized sheets for car roofs. These orders, together with others being placed from other lines of manufacturing activity, chiefly automotive, are keeping the sheet mills well engaged. Some full-finished sheet orders involve 1000, 1100 or 1200 tons daily. The average of sheet mill operation in this district is between 80 and 85 per cent. The automotive industry as a whole has not contracted for its sheet requirements. One or two large users of full finished sheets have contracted ahead but the rule seems to be to order as needs arise. The sale of specialties is fairly heavy and electrical sheets are in fair demand. Large sheet producers here state that February saw larger bookings than any of the preceding three or four months. The same is true of specifications, although shipments did not come up to those of either December or January. March starts out with promises of comparing favorably with December when shipments reached a particularly high aggregate. The price situation is practically unchanged. More sheet producers appear to be observing the going market levels of 3.00c, 3.85c, 5.00c and 5.35c, base Pittsburgh, on blue annealed, black, galvanized and full finished. Occasional concessions of about $2 per ton are noted under those levels, mainly on black and galvanized.

Boston Market Revives

Boston, March 11.—Trading in sheets which has been dull since the first of March shows some signs of improvement. One of the leading mills reports the closing of 1000 tons during the week. Prices are firm at 3.00c, Pittsburgh, for blue annealed. Galvanized sheets are in demand at 5.00c, Pittsburgh.

Japanese Business Coming Out

Chicago, March 11.—Local makers of steel sheets report receiving inquiries from the eastern export houses for light sheets for shipment to Japan for permanent reconstruction work. Six or eight weeks ago Japanese business would have been welcomed but since then there has been such an inflow of domestic orders that it will be difficult to place much of the export tonnage in this district. So far no actual placements of Japan business are understood to have been made here. Second quarter bookings are coming in satisfactorily. The only export business that can be taken is to fill in schedules of certain sizes. Local makers are emphatic in their adherence to the basis of 3.00c, Pittsburgh, for blue annealed, 3.85c for black, and 5.00c for galvanized.

Mills Need More Tonnage

Youngstown, O., March 11.—While a few regular customers have placed a portion of their second quarter sheet tonnage with producers here, the volume is not sufficient to tighten up rolling schedules to any marked extent. Most of the tonnage entered was taken at 3.00c for blue annealed, 3.85c for black and 5.00c for galvanized, base, Pittsburgh. Consumers, however, are making no concerted effort to line up requirements for the next three months, beyond the tonnage already matched with orders, and their policy probably has been prompted by cross currents in the price structure. A division of opinion still exists as to whether the bulk of second quarter black and galvanized tonnage will command more favorable prices than now exist. The market failed to be stabilized on a one-price basis this quarter, at a time when a good volume of business was offered, and unless trading expands on a moderate scale within the next week or 10 days, it is the belief of observers that cross currents in prices will continue to be encountered. Inquiries do not reflect large requirement at present although hope is entertained that the roofing trade will order its usual tonnage next month. Operations moved forward this week from 80 to 84 per cent, four mills at the Empire plant at Niles, O., having been placed in initial operation under the new ownership of the Waddell Steel Co. Quotations remain unchanged at 3.00c for blue annealed, 3.75c to 3.85c for black and 4.90c to 5.00c for galvanized, Pittsburgh.

Eastern Market Easier

Philadelphia, March 11.—Further easing of sheets to some extent is due to the continued disposition of consumers to buy only for prompt requirements. Some second quarter orders have been placed, but only a fraction of requirements. Black sheets sold in the past week at 3.65c, Pittsburgh, but this is exceptional and the general market continues 3.75c to 3.85c Pittsburgh. Blue annealed is mostly 3.00c, although some attractive lots are going at 2.90c. Galvanized continues at 4.90c to 5.00c. Deliveries of blue, black and galvanized sheets can be made by eastern mills in about two weeks, although one mill is scheduled further ahead on blue annealed due to extensive orders for car sheets. Current eastern operations are 90 to 100 per cent on blue annealed; and 75 per cent on black and galvanized. Galvanized demand is getting better with the approach of spring.

Shape Buying Strengthens

Larger Buyers Close on Projects Long in Market—New York Park Extension Program To Require 17,000 Tons—Inquiries Fewer

STRUCTURAL SHAPE PRICES, PAGE 703

New York, March 11.—The tone of the structural steel market is stronger due to approaching spring, although trading at present is restricted. Heavy railroad buying is strengthening the mill position.

The requirements of New York alone involve a heavy tonnage over the next few months. In addition to approximately 50,000 tons of school work considerable steel will be needed for other municipal projects. Subway work will be a large item, while still indefinite as to when plans will be issued, the Central Park West extension, recently decided upon in most essential details, will require fully 17,000 tons, and other extensions are actively contemplated. McKenzie, Voorhees & Gmelin, 342 Madison avenue, is completing plans on a new municipal building in Brooklyn, requiring several thousand tons. During the past week, 6000 tons of school work has been brought out for bids early in April.

Some Projects Being Closed

Boston, March 11.—The structural steel market in New England is active. Several of the many prospective round tonnage jobs were let last week and new work is developing. Contract for the Employer's Liability Insurance building, calling for 1840 tons of steel was let to New England Structural Co. This fabricator also took 850 tons for the Investment Trust Co. building in Worcester, Mass. Plain material prices are unchanged at 2.35c to 2.40c, Pittsburgh.

Few Lettings Are Noted

Pittsburgh, March 11.—Inquiries for structural shapes are fairly numerous but lettings in this territory are scarce. They are confined chiefly to small jobs below 100 tons, although two or three propositions involving from 1000 to 3000 tons each have been closed this week. It is understood that the sheet mill building for Youngstown Sheet & Tube Co. has been let to an independent fabricator, 1800 tons; the new building at Wilmerding, Pa., for Westinghouse Airbrake Co., 2900 tons, went to McClintic-Marshall Co. Higgenbottom & Jones, Charleston, W. Va., general contractor, awarded the contract for 1030 tons of steel, together with the contract for the ornamental iron for the Coal Exchange building, Huntington, W. Va., to L. Schreiber & Sons Co., Cincinnati. The general contract for the 14-story building at Huntington, W. Va., for the Union Bank & Trust Co., taking 850 tons, went to George A. Fuller Co., New York. Structural shapes are firm here at 2.50c, base Pittsburgh, although 2.40c, Pittsburgh, has been quoted elsewhere.

More Large Projects Are Up

Chicago, March 11.—Structural steel interests have been surprised by the number of large projects that appeared last week. An addition to Hotel Sherman, Chicago, which is promised for an early summer job, should add up to at least 4000 tons. In about two months plans will be out for a 2000-ton department store. The Stevens hotel, a 15,000-ton project, now is quite active again and if prices are right a decision to go forward may be made the first week of April. Bids close this week on steel for the Lake Shore Athletic club, and it appears the original estimate of 4000 tons is low by 2000 tons. The Chicago board of education plans 13 schools or additions, which will require several thousand tons. The Chicago & Northwestern railroad is taking bids on 1800 tons for its 1924 bridge requirements. The Calumet Power Co. may buy several thousand tons of structurals for a proposed 16-mile transmission line. This week's awards include 5547 tons for an office building in San Francisco and 2653 tons for a hospital addition in Chicago. Chicago city officials and heads of railroads entering Chicago appear agreed upon a terminal project to go ahead in about a year which will take upward of 20,000 tons of steel. The plain material price is 2.60c, Chicago.

Large Building Program Planned

Buffalo, March 11.—An ambitious building program for spring is contemplated in this district. Plans have been filed for the new Liberty bank building, to be 23 stories in height. It is estimated that the steel will run at least 2500 tons. A large volume of smaller lettings is in prospect.

Large Awards Are Few

Cincinnati, March 11.—Inquiries for structural shapes for various small jobs in this and nearby vicinities are more numerous although large awards are few and far between. All fabricators report receipt of a fair number of 50 to 100-ton contracts, and state that many of the larger projects still are pending. The Stacey Mfg. Co., has received a contract for a 1,500,000-cubic foot capacity gas holder from the Cumberland County Gas Co., Millville, N. J., which involves about 1000 tons of steel. The quotation on plain shapes is firm at 2.50c Pittsburgh.

Bookings Average Less

Philadelphia, March 11.—Structural shape bookings in this district last week showed an increase with some mills but in general averaged somewhat less. Eastern mill operations continue to average from 75 to 90 per cent. Prices on plain material continue 2.25c to 2.40c, Pittsburgh, depending upon the attractiveness of the business.

Few Large Inquiries Coming Out

Cleveland, March 11.—Few large inquiries for structural shapes are coming out in this district. A good volume of small tonnage lots continue to be sought. Competition is keen among fabricators in this district for business and buyers hesitate to close quickly in hopes of obtaining rock bottom prices. The larger interests refuse to cut fabrication or erection prices and continue to book a good amount of business at their regular quotations. Approximately 1600 tons was booked in this territory last week in six projects. Plain material prices are firm at 2.50c, Pittsburgh, and with the exception of a few smaller fabricators, erected and fabricated prices also are strong.

STRUCTURAL CONTRACTS PLACED

Building awards this week..... 32,327 tons
Building awards last week..... 21,406 tons
Building awards two weeks ago.... 24,591 tons

5547 tons, office building for Pacific Telephone & Telegraph Co., San Francisco, to Judson Iron Works and Pacific Rolling Mill Co.

3500 tons, James T. Stewart loft at 128-36 West Thirty-fifth street, New York, to Levering & Garrigues Co.

2900 tons, addition to plant at Wilmerding, Pa., of Westinghouse Airbrake Co., to McClintic-Marshall Co.

2653 tons, addition to St. Lukes hospital, Chicago, to Gage Structural Steel Co. and Vanderkloot Steel Works.

2000 tons, Minskoff apartments at Eighty-ninth and Ninetieth streets along Amsterdam, N. Y., to Bethlehem Fabricators, Inc.

1840 tons, employer's Liability Insurance building, Boston, to New England Structural Co. General contractor, George W. Harvey Co.

1800 tons, sheet mill building for Youngstown Sheet & Tube Co., Youngstown, O., to an independent fabricator.

1030 tons, Coal Exchange building, Huntington, W. Va., to L. Schreiber & Sons Co., Cincinnati, through Higgenbottom & Jones, Charleston, W. Va.

1000 tons, gas holder, Cumberland County Gas Co., Millville, N. J., to Stacey Mfg. Co.

950 tons, power plant for Illinois Power & Light Co. at Tecumseh, Kans., to Mississippi Valley Structural Steel Co.

850 tons, office building, Investment Trust Co., Worcester, Mass., to New England Structural Co.

750 tons, North Dakota-Minnesota bridge at St. Vincent, Minn., to Lakeside Bridge & Steel Co.

700 tons, Tacoma hotel, Tacoma, Wash., to Poole & McGonigle.

600 tons, Kingsbridge telephone exchange, Bronx, N. Y., to Hay Foundry & Iron Works.

600 tons, loft, 252 West Thirty-eighth street, New York, to Hay Foundry & Iron Works.

600 tons, Jewish hospital, Brooklyn, N. Y., to A. E. Norton, Inc.

500 tons, Security Trust Co. building, Detroit, to Fort Pitt Bridge Works.

500 tons, Starkman apartment West Eleventh street, New York, to A. E. Norton, Inc.

475 tons, five spans for Western Pacific railroad at Shafter, Nev., to Virginia Bridge & Iron Works.

400 tons, loft at Forty-eighth street, near Fifth avenue for Bing & Bing, New York, to unnamed fabricator.

350 tons, Press building for Scripps-Howard interests, Cleveland, to T. H. Brooks Co.

350 tons, office building, Providence Gas Co., Providence, R. I., to Lehigh Structural Steel Co.

320 tons, White store, Augusta, Ga., to Carolina Steel & Iron Co.

300 tons, Jewish temple, Brooklyn, N. Y., to Communipaw Steel Co.

300 tons, plant addition for Acklin Stamping Co., Toledo, O., to Bellefontaine Bridge & Steel Works.

294 tons, boiler and stoker supports at Iowa Electric Power Co., Iowana, Iowa, to Rock Island Bridge & Iron Co.

250 tons, plant additions for Elyria Iron & Steel Co., Elyria, O., to Fort Pitt Bridge Works.

250 tons, telephone exchange at Rockaway, L. I., N. Y.; to Paterson Bridge Co.

235 tons, library and gymnasium for State college, Raleigh, N. C., to Carolina Steel & Iron Co.

200 tons, coal tower trestle for Brooklyn Edison Co., Brooklyn, N. Y.; to New York Shipbuilding Corp.

200 tons, Kline apartments, Erie, Pa., to Erie Steel Construction Co.

200 tons, industrial building for Ward Co., near Newark, N. J., to unnamed fabricator.

150 tons, Cherry street substation for Philadelphia Electric Co., Philadelphia, to McClintic-Marshall Co.
150 tons, Hayden avenue branch of Cleveland Trust Co., Cleveland, to Cleveland Structural Steel Co.
140 tons, crushing plant for Union Rock Co., at Azusa, Cal., to Llewellyn Iron Works.
130 tons, bridge repairs chiefly for New York Central, distributed among several fabricators.
125 tons, Sioux river bridge near Bayfield, Wis., to Wausau Iron Works.
110 tons, Meyer's store, Greensboro, N. C., to Carolina Steel & Iron Co.
110 tons, dining hall and gymnasium, North Carolina College for Women, Greensboro, N. C., to Carolina Steel & Iron Co.
110 tons, Cone Export & Commission Co. building, Greensboro, N. C., to Carolina Steel & Iron Co.
108 tons, Sioux river bridge at Washburn, Wis., to Wausau Iron Works.
100 tons, factory for R. Thomas & Sons Co., Lisbon, O., to Fort Pitt Bridge Works.
100 tons, brass foundry for Prime Mfg. Co., Milwaukee, to Milwaukee Structural Steel Co.
100 tons, storage buildings for Bates & Rogers, Chicago, and Hewitt Rubber Co., Buffalo, N. Y., to Bancroft-Jones Co.
Several hundred tons, additional work for Public Service Production Corp., Newark, N. J., of which 100 tons went to Shoemaker Bridge Co.

STRUCTURAL CONTRACTS PENDING

15,000 tons, Stevens hotel; contractors taking bids up to April 2; owner closes bids April 5.
8000 tons, lift spans for Jersey Central railroad bridge over Newark Bay, N. J.; specifications out within two weeks.
6000 tons, six schools, each involving about 1000 tons, New York; bids closed April 8. The schools are as follows: No. 216, 217 and 220, Brooklyn; No. 82 and 83, Bronx; and No. 126, Queens.
5000 tons, Statler Hotel, Boston; plans out.
4000 tons, (approximately) addition to Hotel Sherman, Chicago; pending.
3300 tons, highway bridge over Connecticut river, Springfield, Mass., bids closed March 25; previously noted as contemplated.
3000 tons, refrigerating plant in Washington market section, for Geobery Holding Corp., New York; general contractors' bids to be asked late in April.
2500 tons, 23-story building for Liberty bank, Buffalo, N. Y.; plans out.
2000 tons, department store for W. A. Wieboldt & Co., Chicago; bids to be taken in about two months.
2000 tons, hotel St. Dennis, Atlantic City, N. J.; bids asked.
1800 tons, 1924 bridge requirements for Chicago & Northwestern railroad; bids in.
1700 tons, movable span for a bridge over Ashley river, for the state department of highways, South Carolina, bids closed March 20.
1500 tons, plant for Libby-Owens Sheet Glass Co., Toledo, O.; bids in on revised plans.
1500 tons, high school at Jamaica, L. I.; contemplated.
1000 tons, Meirowitz apartment, West Sixty-sixth street, New York; Sommerfield & Stickler, architects. Plans out soon.
850 tons, bank building for Union Bank & Trust Co., Huntington, W. Va.; general contract awarded George A. Fuller Co.
800 tons, apartment in Philadelphia; Roberts & Roller, general contractor.
700 tons, loft at 210 West Thirtieth street, New York; pending.
600 tons; factory for Spaulding Fibre Co., Tonawanda, N. Y.; pending.
600 tons, Conrad & Glaser loft, West Twenty-sixth street, New York; out for bids shortly.
500 tons, office building, Waterman Pen Co., School street, Boston; bids being taken.
400 tons; additional steel for Niagara Falls, Lockport & Ontario Power Co. towers; pending.
350 tons, municipal building, Bluefield, W. Va.; general contract awarded H. A. Lucas, Bluefield, W. Va.
300 tons; Aquinas institute, Rochester, N. Y.; bids in.
200 tons, bank building, Danbury, Conn.; bids being taken.
150 tons, Y. M. C. A. at Massillon, O.; bids in.
100 tons, extension to Nickel Plate shops at Conneaut, O.; pending.
100 tons, second unit Marillac hall, Mt. Vincent, New York; bids asked.
Tonnage unstated, addition to Davis Drygoods Co. building, Chicago; plans out in 60 days.
Tonnage unstated, possibly 3000 for 13 schools and additions, by Chicago board of education; pending.
Tonnage unstated, bridge requirements for 1924 for Chicago, Rock Island & Pacific railroad.

Car Buying More Normal

Burlington in Market for 1000 Stock Cars-Canadian Mills Book 96,000 Tons of Rails—Canadian National Railways Places 1755 Miscellaneous Cars

RAILROAD TRACK MATERIAL PRICES, PAGE 703

New York, March 11.—Buying of freight cars continues in satisfactory volume, although devoid of the large orders which featured last week's market, according to most builders. Locomotive buying is featured by the award of 35 by the Union Pacific, 25 going to the American Locomotive Co. and 10 to the Baldwin Locomotive Works. The Florida East Coast is inquiring for 25 locomotives and the Rock Island inquiry for 10 passenger locomotives is expected shortly.

Both the Pennsylvania and Reading railroads are making extensive purchases of track spikes and other track supplies. An improvement is noted in the accessories market, one of the largest contracts placed recently calling for train control apparatus for five railroads affiliated with the New York Central system. This business was divided between several manufacturers.

Demand Dwindles to Dullness

Pittsburgh, March 11.—Little change is apparent in the light rail market. Demand is confined to a few single carload orders by coal mine operators. While 2.00c to 2.15c, base Pittsburgh, is the usual spread of quotations, 2.25c still is quoted. Track accessory makers continue to work off their backlogs, operating practically full. The Louisville & Nashville railroad is in the market for 30 locomotives, 34 passenger cars, and 3675 freight cars.

Clover Leaf Buys Rails

Cleveland, March 11.—Orders for rails for 1924 delivery have been distributed by the Clover Leaf. Steel corporation mills received 5000 tons, the Bethlehem Steel Co. 1500 tons, while an unstated tonnage went to the Inland Steel Co. An inquiry has been issued by the Wheeling & Lake Erie railroad for 100,000 to 150,000 tie plates and for 1700 pairs of angle bars. The Baltimore & Ohio railroad has an inquiry in the market for the rebuilding of 500 freight cars. No distribution has yet been made by the Nickel Plate for its inquiry of 25 locomotives.

Rail Buying in Prospect

Chicago, March 11.—The Chicago Rock Island & Pacific railroad is expected to come into the local rail market in the near future for rails necessary to carry out its requirements for replacing 296 miles of track this year. A western carrier which already has placed a large tonnage for 1924 delivery is considering buying 20,000 to 25,000 tons additional. The Illinois Central, Chicago & Northwestern and other railroads which already have placed their 1924 business are pressing for delivery. The leading maker booked 5000 tons of angle bars, 25,000 kegs of spikes and bolts in about equal lots and 2000 tons and 3500 tons of tie plates in two lots.

A steel interest figures that railroad freight cars have been placed at the rate of 5280 per week since Jan. 1, compared with an average of 2000 per week in 1923 and 4360 in 1922. Forty per cent of the total of all cars recently ordered by railroads are claimed to have come to Chicago district builders. The Louisville & Nashville is expected to make an award this week on its inquiry for 1650 box cars, 1000 automobile cars, 1100 steel or composite gondolas, and 150 flat cars. The Chicago, Burlington & Quincy is inquiring for 1000 stock cars. The Youngstown Sheet & Tube Co. may place 500 to 600 hopper cars for repairs. The Illinois Central railroad has repairs to 2095 cars hanging fire.

Large Rail Orders Booked

Toronto, Ont., March 10.—The placing of contracts for steel rails, track fastenings, passenger and freight cars and locomotives by the Canadian National Railways and the Canadian Pacific railway has resulted in improved condition in the Canadian iron and steel market. Last week the Canadian National railways in addition to former contracts, placed an order with the British Empire Steel Corp., for 56,000 tons of 85 and 100-pound steel rails to be rolled at Sydney, N. S.; also an order for 40,000 tons of 85 and 100-pound rails to be rolled at Sault Ste. Marie, Ont., by the Algoma Steel Corp.

CAR ORDERS PLACED

Canadian National Railways, 1000 60-ton box cars, 150 50-ton convertible ballast cars, 50 cabooses, 500 general service cars, 20 all steel baggage cars, 20 all steel passenger coaches, and 15 mail and express cars, allocated as follows: Canadian Car & Foundry Co., 400 box cars, 150 convertible ballast cars, 50 cabooses, 20 passenger coaches and 15 mail and express cars; National Steel Car Corp., 400 box cars, 20 baggage cars; Eastern Car Co., 200 box cars, 500 general service 50-ton freight cars.
Universal Portland Cement, 50 hopper cars, to Mt. Vernon Car Mfg. Co.
Fruit Growers Express, 100 underframes, to the Ryan Car Co.
New York, Westchester & Boston, 10 passenger coaches, to Pressed Steel Car Co.
New York Central, noted last week as having exercised option on 3000 cars has allocated the order as follows: 1000 hoppers to Standard Steel Car Co., 1000 hoppers to Pressed Steel Car Co. and either 500 or 1000 box cars to American Car & Foundry Co.
Fruit Growers Express, 1000 underframes, to Pressed Steel Car Co.
Standard Oil Co., 10 gondolas, to Pressed Steel Car Co.

CAR ORDERS PENDING

Youngstown Sheet & Tube Co., repairs to 500 to 600 hopper cars; pending.
Chicago, Burlington & Quincy railroad, 1000 stock cars; pending.
Utah Copper Co., six flat car underframes; pending.
Central of Georgia, 100 caboose underframes; pending.
Norfolk & Western, reported in last week's issue as inquiring for bids on the rebuilding of 1000 gondolas, contemplates also the purchase of 2000 box cars.
Kingan Refrigerator Line, Indianapolis, 100 refrigerator cars; bids asked.
Bessemer & Lake Erie, reported to be contemplating the purchase of passenger cars.
New York Central, a number of suburban cars and horse express cars; bids asked.
Baltimore & Ohio, repairs to 500 cars; pending.

The Nonferrous Metals

Copper Strong as Various News Developments Support It—Tin Price at New High but Zinc Slumps

	Copper—Electro delivered	Copper—Lake delivered	Spot tin Straits New York	†Lead New York basis	Zinc St. Louis basis	Spot† aluminum	Spot antimony	Spot nickel
March 5	14.00	14.12½	56.62½	9.87½	6.67½	27.00	11.50	29.00
March 6	13.87½	14.12½	57.00	9.75	6.65	27.00	11.50	29.00
March 7	14.00	14.12½	56.50	9.55	6.62½	27.00	11.50	29.00
March 10	14.09	14.25	56.75	9.55	6.57½	27.00	11.50	29.00
March 11	14.05	14.25	58.50	9.55	6.55	28.00	11.25	29.00

†Outside market quotation.

NEW YORK, March 11.—Copper has been the center of interest in the metal markets, holding strong both in London and in this market despite the break in French francs to new low levels and the unsettlement caused by this development in the international markets. A considerable tonnage of copper has been sold at 14c, delivered. The market reached that level a week ago Monday, then sagged to a shade below that level, to recover to 14c to 14.25c today, the higher figure applying only to Middle West.

The week's news included the announcement of plans to curtail by some of the leading producers, such as Inspiration, Anaconda, Calumet & Hecla and others together with the forced curtailment by Utah Copper and Nevada Consolidated due to bad weather. This curtailment is expected to amount to about 15,000,000 to 20,000,000 pounds monthly. Stocks of refined copper were reduced 30,000,000 pounds in February, due to a cut in refinery output of 15,00,000 pounds and an increase in deliveries of 15,000,000 pounds, as compared with January. All the lines affiliated with electrolytic copper have been strong. Rolled and drawn products now are quoted on a 14-cent copper base.

Zinc has been sagging steadily in a dull market, lacking both domestic galvanizers' interest and foreign support. Prices have eased from their recent high of close to 7c, back to 6.55c, East St. Louis. The smelter stocks of slab zinc declined 3505 tons in February.

Pig lead prices for future shipment have declined in the open market, due to light demand. Inquiry for nearby shipment also has decreased. Prices have been ranging from 9.37½c to 9.50c, St. Louis and 9.50c to 9.62½c, New York, for prompt and March shipment, down to 9c, St. Louis, and 9.25c, New York, for April and May shipments.

Tin prices reached new high levels for the four years since the end of government control the past week, reflecting the continued strong bull activities here and abroad. Process for spot Straits tin have ranged between 55.75c and 58.50c the past week.

Antimony prices advanced to 11.50c, duty paid, for spot and maintained at that level until today and then eased to 11.25c.

Sales of 99 per cent virgin ingot aluminum are reported for second half delivery at 28c, duty paid. Resale parcels of 98 to 99 per cent are obtainable at 27c, delivered.

The domestic producer increased ingot aluminum 1 cent on Monday and the importers followed today by adding 1 cent, thus keeping the outside market at 1 cent premium, or 29c for 99 and 28c for 98 to 99 per cent.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
Copper, hot rolled, 4 oz., min.	21.75
High brass	18.25
Zinc, ga. 9 to 18 (plates ½c less)	9.75
Lead, full sheets (cut ¼c more)	12.50
Aluminum, base 18 ga. and up	36.40
SEAMLESS TUBES	
High brass	22.50
Copper	23.75
RODS	
High brass, round, ⅝ to 2½-inch	16.00
Naval brass rods	18.75
WIRE	
Copper	16.00 to 16.50
High brass	18.75

Old Metals

Dealers' buying prices cents per pound

HEAVY RED BRASS	
Cleveland	9.50
New York	8.75
Chicago	9.00
HEAVY YELLOW BRASS	
New York	5.75 to 6.25
Chicago	7.00
Cleveland	6.50
ZINC	
New York	4.00 to 4.50
Cleveland	4.25
Chicago, dross	4.75
HEAVY COPPER AND WIRE	
Cleveland	11.00
New York	10.75
Chicago	10.75
RED BRASS TURNINGS	
New York	7.75
Cleveland	8.50
Chicago	8.50
YELLOW BRASS TUBING	
Cleveland	6.00
NO. 1 BRASS ROD TURNINGS	
Cleveland	6.25 to 6.50
New York	6.75 to 7.00
Chicago	6.75
ALUMINUM BORINGS	
Cleveland	18.50

Manganese Ore Taken

New York, March 11.—Some interest in manganese ore is noted here, but it is of limited extent and the market is much less active than in Europe. As a result of heavy European buying, no Brazilian ore is being offered here, since the free supply has largely been sold to Europe for shipment in 1924. The nominal price of Brazilian ore is 44 cents per unit, c.i.f. tidewater. Some Indian manganese are has been offered at 44½ cents for April and May shipment. The supply of Indian ore is fairly well sold up for the first half. For Caucasian manganese ore the asking prices are 45 cents on the washed grade and 42 cents on the ordinary grade. Due to the heavy demand for manganese ore in Europe and the increase in demand in this country as compared with last year, arrangements have been made to increase the Caucasian output.

By-Products Steady

Light Oil Distillates Strong—Benzol Deliveries Easier

New York, March 11.—Steadiness characterizes the by-products market, in price and demand. Light oil distillates may be quoted as strong as follows: Pure benzol, 25 cents, works, in tanks, and 30 cents in drums; 90 per cent benzol, 23 cents in tanks and 28 cents in drums; solvent naphtha, 25 cents in tanks and 30 cents in drums; toluol, 26 cents in tanks and 31 cents in drums; xylol, 28 cents, works, in tanks and 33 cents in drums.

The producers' market on phenol is nominally 28 cents, for contract shipments. The outside market, however, ranges around 38 cents New York, on spot shipments, this price representing about the best that can be done. Naphthalene is steady at 6 cents, works, for flakes and 7 cents for balls.

As previously noted, sellers of toluol and solvent naphtha have few supplies on hand and for that reason are having difficulty in keeping up with current buying, although inquiry is not particularly heavy. This shortage is attributed chiefly to the fact that production of motor fuel at this time is large. The situation in benzol and xylol as to deliveries is less acute.

Sulphate of ammonia for domestic account may be quoted nominally at $2.75 to $2.80, works, and for foreign account, $2.70 to $2.75, port, in double bags. While there is no large surplus, this is due to the heavy shipment of material against annual contracts and does not reflect any marked degree of activity at present.

Coke Oven By-Products

Spot*

Per Gallon at Producers' Plants in Tank Lots	
Pure benzol	$0.25
Toluol	0.26
Solvent naphtha	0.25
Commercial xylol	0.28
Per Pound at Producers' Plants	
Phenol	0.38
Naphthalene flake	0.06
Naphthalene balls	0.07
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia	$2.70 to $2.75
Contract	
Pure benzol	Nominal
Toluol	Nominal
Solvent naphtha	Nominal
Commercial xylol	Nominal
Per Pound at Producers' Plants	
Phenol	$0.28
Naphthalene flakes	0.06
Naphthalene balls	0.07

*Spot distillates are subject to shading.

Prices Cut in Northwest

Portland and Seattle Dealers Compromise with Quotations on Lower Level—Foreign Material Not Offered Freely

SEATTLE, March 7.—Small tonnages predominate in iron and steel selling but the volume is satisfactory. Mill representatives have taken more orders since Jan. 1 than during the first two months of last year. Wholesale jobbers report their business improved over a year ago.

Rate cutting, recently apparent in the Portland district, has been adjusted but has resulted in lower prices there and at Seattle. Larger dealers regret this situation as they feel conditions did not justify reductions. The trouble was started by sellers who believed lower prices would stimulate demand.

In the metal trades, business is opening up following a quiet winter. Work is well diversified as between foundries and machine shops. The labor turnover is at a minimum and shops and factories appear to be getting a fairly uniform volume of new business. There is no surplus of labor and additional skilled men could find employment, according to the United Metal Trades association.

Building permits in Seattle reached 866, valued at $2,217,300, establishing a new record for February. Factories, office buildings, warehouses, schools, one library and retail stores made most of this total. The gain over February, 1923, was $200,000. Compared with that month, February, 1924, showed a gain of $30,000,000 in bank clearings and $400,000 in real estate transfers.

Pig Iron and Coke

Foundries are reasonably busy and interest in pig iron is normal. Some buying has been done for July delivery in the last week, requirements for second quarter now being fully covered. Importers report the market steady, No. 1 Glengarnock being firm at $33, duty paid. Continental iron is being offered but buyers are not attracted. Reports from San Francisco are that French iron, recently landed there, did not meet expectations, being too high in phosphorus. Domestic iron is entirely out of line. Some Indian iron is offered on the coast but it cannot compete here with British iron because of the lack of direct water service from India. Chinese iron is available here at $29, which considering the grade, is considered too high. This iron is not a good scrap carrier and consumers in this territory prefer to use the better grades of Scotch and British with which they are familiar.

The normal quantity of coke is being brought from Fernie, B. C., for use with local grades, the demand continuing steady. Fernie sells here at $16.50. One lot of 250 tons of Plean coke has been placed with local importing interests for delivery here in May at $17.

Bars, Plates and Shapes

The turnover of finished steel is satisfactory. Small sizes of shapes are in excellent demand while there has been a run on plates for oil tank construction and similar work. The lighter gage plates are moving in better volume. The local mill reports a steady run of new business, practically all in small tonnages. Construction and the manufacturing trade account for most of the demand. No change in prices is announced by the Pacific Coast Steel Co., its quotations being in line with eastern prices. Recent reduction by wholesalers is being absorbed by jobbers. Local interests this week received an inquiry for 100 tons of structurals from Japan, the first interest indicated by that market in several monhs. There seems no chance of doing business with China at present.

The trade is interested in the pending award of approximately 500 tons of reinforcing material for the new Stimson office building. Fabricating plants report considerable work in hand and much in prospect. Poole & McGonigle of Portland received the award for approximately 700 tons of structural material for the new Tacoma hotel. The Portland bridge contract to be awarded April 1 is the largest in sight. The tonnage involved is not known to local interests. Specifications call for a lump sum bid for foundation and superstructure. This involves a large contract as the piers are to be sunk 130 feet below water level, necessitating extensive caisson work.

While sheets are not as active as some other items prices are holding steady not having been reduced with bars, shapes, plates and bands.

Old Materials

No. 1 cast scrap shows continued firmness, as demand is increasing and supplies are light. Wholesalers are paying about $20 and asking $25. Consumers can purchase at $22 and $23. Dealers expect prices to remain firm as little of this material has been accumulated. Steel scrap shows little change. Large buyers are paying $10 per gross ton this week as compared with $10.50 a few days ago. It remains a buyers' market, price depending largely on grade. The city last week sold 200 tons of choice steel scrap at $10.50 per net ton. Inquiry for this material from China and Japan is at a minimum.

The annual report of the Massey Harris Co., Toronto, agricultural implement manufacturer, shows a deficit of $22,448, as compared with deficits of $643,000 in 1922, and $1,456,000 in 1921. The surplus carried forward was reduced to $750,152. Sales for the year exceeded those of 1922 by 10 per cent, but they were still only about two-thirds of the normal volume.

Scrap Continues Weak

(*Continued from Page 704*)

goes at Weirton and Vandegrift, which had been placed on account of congestion, loosens up that market somewhat.

Steel Weak at Detroit

Detroit, March 11.—The iron and steel scrap market continues weak with prices unchanged at the recent decline. Tonnage moving is not large. Removal of some embargoes is expected to expedite movement of scrap already purchased. Producers are sending out notices of larger offerings but under present price conditions and inability of dealers to ship sales are not active.

Weak at Cincinnati

Cincinnati, March 11.—Owing to lack of mill buying prices of iron and steel scrap have become nominal with the tendency weak. Dealers say mills are supplied with scrap for 30 days. Practically all grades are 50 cents per ton lower than a week ago. The trend is downward. Offerings by railroads are less abundant. The Norfolk & Western has closed a small list which went into the Portmouth, O., and Pittsburgh districts.

No Strength at St. Louis

St. Louis, March 10.—After many weeks of continued strength, the market for iron and steel scrap has weakened. Prices are about 50 cents lower on an average, and buying is decidedly slow. Weakness is due to a large quantity of distress scrap, heavier railroad offerings, augmenting yard stocks, a lack of demand and reaction on the part of melters against high prices. Another influencing factor is weakness at Chicago and other points East. Steel specialties and rails are holding their own, and are relatively stronger than other irons on the list. Weakness is most pronounced in rolling mill and foundry grades. Demand from blast furnaces has also subsided to a large extent.

Railroads have been moving their scrap and arrivals from that source being more than can readily be digested. Lists before the trade include the following: Cotton Belt, 2000 tons; Illinois Central, 8000 tons; Pullman Co., 600; St. Louis & San Francisco, 2000 tons; Wabash, 300 tons; Union Pacific, 1200 tons; Baltimore & Ohio, 18,000 tons; Santa Fe, 3000 tons; Norfolk & Western, 9500 tons; Louisville, Henderson & St. Louis, 2000 tons of relayers and St. Louis Terminal Railway association, 1200 tons.

Southern Market Quiet

Birmingham, Ala., March 10.—The lull in the iron and steel scrap market continues. Delivery is active on contracts. Stocks on yards are being piled in anticipation of improvement of conditions. Quotations are unchanged.

Testimony Closed

In Pittsburgh Basing Point Case—Fix Date For Arguments

Washington, March 11.—Final testimony in the prolonged hearings of the complaint of the federal trade commission against the United States Steel Corp. on the practice of basing steel prices on Pittsburgh was completed Friday afternoon, and following the examiner's report, which must be filed by March 30, the briefs and final arguments will be submitted. At the request of Attorney W. W. Corlett, of the Steel corporation counsel, the date of the final arguments has been advanced so they may be completed by June 23.

Under the new arrangement, the brief of the trade commission counsel must be submitted by May 22, and the respondent company's brief required to be before the commission by June 9. The closing testimony consisted of sur-rebuttal statements by the Steel corporation before Examiner J. W. Bennett, hinging on uniformity and nonuniformity of prices in the steel consuming districts served by Pittsburgh and Chicago producing territories and also the principle of the relative operation of the law of supply and demand, free competition and market activity in these districts.

While Steel corporation counsel admitted concessions to car builders, it was denied concessions in the prices of bars and other material are made to implement dealers, accounting for variations in prices submitted in testimony, which was the contention of trade commission counsel.

The Steel corporation attorneys submitted documentary evidence intended to refute exhibits offered by the commission in previous testimony. Attorney Steinhauer objected to much of this evidence on the ground the statements were assumption of fact and that figures for preceding and subsequent periods were not given by which comparisons could be made. He objects to figures on rail production and consumption on the ground that a period of 14 years was taken into consideration, including the years 1910-11, which he said were heavy rail buying years, and that heavier output was shown in this period than would have been the case in 5-year periods under which the previous averages of the Steel corporation attorneys were shown. Hugh E. White, a statistician for the trade commission, also was a witness.

Plan Plant Expansion

Contracts have been let by the Elyria Iron & Steel Co. for constructing an addition to the cold-finishing department of its plant at Elyria, O. The expansion will increase the capacity of the plant through additional space in the annealing box building, the furnace building, the gas producer house, and the pickling building, according to H. B. Wick, president of the Elyria company. Approximately 35,000 square feet of additional floor space will be made available when the 1-story steel frame building is completed. No new equipment will be needed at present although purchases in the future are contemplated as expansion makes greater production necessary.

Iron Ore Shippers Are Making Reservations

Cleveland, March 11.—Lake Superior iron ore producers are making reservations for their regular customers, at prices to be determined later. Considerable activity is noted in the market as negotiations proceed, but prices apparently will not be determined definitely until later in the month. The Ford inquiry for 250,000 tons has not been closed, and several of the leading sellers have not sent in bids. A much larger tonnage may be placed "if the price is satisfactory." A firm offer of last year's price by a representative producer has not resulted in action. The situation is indefinite, as many blast furnaces companies tell ore producers prices should come down, and withhold their orders, while large steel interests believe a confirmation of last year's prices would tend to stabilize iron and steel market conditions. Reports that offers have been made at less than last year's figures, if correct, evidently pertain to some of the small shippers, this being customary every year. None of the large interests with resources sufficient to supply good tonnages is seeking business on such a basis, according to their statements.

Valley Maker Will Extend Sheet Capacity

Contracts for eight hot mills and six cold mills for an electrically driven sheet mill have been awarded by the Youngstown Sheet & Tube Co. to the United Engineering & Foundry Co., Pittsburgh. The new sheet mills will be installed in buildings to be erected at one end of the plate mill property owned by the Brier Hill Steel Co. prior to its recent acquisition by the Youngstown Co. It is understood 1800 tons of structural steel for the mill buildings have been awarded to an independent producer. The mills will be scheduled by high grade stock. The motors have not yet been purchased.

Japanese Buying

Appearing in Export Steel Market—General Foreign Sales Less

New York, March 11.—Japanese buying for new construction purposes under the financing provided by the recent floatation of a large loan in this country is beginning to appear. Inquiries so far put out have called chiefly for sheets and these of the lighter gages. It is now understood that most of the Japanese buying is to be done through the established export channels in this city and less of it than expected will be handled by the Japanese embassy at Washington.

Several thousand tons of rails are included in pending Japanese inquiries of which 1100 tons is for the Keithen railways, Tokio. Substantial pipe tonnages are pending. American mills will supply 700 tons of electrical sheets against an order just placed in Japan.

Buy More Foreign Steel

New York, March 11.—Additional sales of foreign steel into this district during the past week aggregated at least several thousand tons. This business included beams, commercial steel bars and tank plates. On the tank plates the price was around 2.00c per pound, duty paid delivered on dock, while on the beams and bars the price was somewhat less.

Plan New Steelworks and Sheet Mills in South

Birmingham, Ala., March 11.—The Tennessee Coal Iron & Railroad Co. will shortly begin the construction of a new steel plant with four open-hearth furnaces and a new sheet mill to produce plain and corrugated black and galvanized sheets. The new steelworks and rolling mill will be built at the Fairfield works, according to a statement made today by G. G. Crawford, president of the Tennessee company. Details were not made public but it is estimated that five or six million dollars will be expended in this development. The site for the new plants have been selected and the work will have been started by the time the elevated railroad which is being built from the Fairfield works to the ore mines on Red Mountain has been completed a few months hence.

The erection of sheet mills in Alabama will mark a new direction of expansion of the sheet making industry, the present southern limits of which are St. Louis and Ashland, Ky.

British Market Is Slowing Down

Pig Iron Prices Easier, Production Drops and Stocks Accumulate—Steel Output Increased—Seattle Inquiring for Foundry Iron—Less Activity on Continent —Belgians Book Rails for Holland and South Africa

Iron Trade Review Staff Cable

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LONDON, March 11.—Demand for iron and steel in the British market shows signs of slackening, and pig iron prices are easier. Twelve blast furnace stacks are out, and stocks are accumulating. The total production of pig iron in Great Britain in February was 610,000 tons compared with 630,000 tons in January and an average monthly output of 619,775 tons in 1923. At the end of February 195 furnaces were in operation, compared with 194 at the close of January. Steel production during February totaled 750,000 tons compared with 680,000 tons in January and a monthly average of 706,166 tons in 1923.

Shipments of pig iron to the United States from Middlesbrough in February totaled 3900 tons. Among current inquiries for pig iron one is noted for 500 tons of English foundry iron for delivery to Seattle, Wash.

Less activity is observed in the steel market on the continent. The mills have taken all the orders they can handle for some time, and deliveries are much delayed. Belgian steel bars are quoted at £6 15s ($28.82), while German bars are £6 17s 6d ($30.31), Antwerp. French prices are firmer. The Belgians have relighted four blast furnaces, and one has been started in France and another in Luxemburg.

The Germans have lost a large order for bridge material for Rotterdam. A report from Brussells states that an order for 3000 tons of rails for Holland has been placed with Societe La Providence, Charleroi. An order for 500 tons of rails for South Africa has been placed with Societe Anonyme d'Ougree-Marihaye, Belgium.

Changes in the British market during the week bring the following products to the prices quoted: Billets, £7 10s ($32.03); galvanized sheets, £18 10s ($79); Middlesbrough No. 3 foundry iron, £4 13s ($19.86); No. 3 Scotch foundry iron, £5 ($21.35); furnace coke £1 9s ($6.19) and foundry coke £1 15s ($7.47).

Sterling exchange is figured on a basis of $4.27.

European Export Steel Prices Begin Advance

European Staff Special

European Headquarters,
IRON TRADE REVIEW,
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Sterling—$4.30

LONDON, March 3.—A general stiffening of iron and steel prices for export is noticeable in Great Britain, France and especially Belgium, where quotations on certain classes of finished steel products have advanced by over 50 francs ($1.85) per ton. However the difference between British and continental prices continues to be largely in favor of the latter, since British quotations in certain cases are more than £2 ($8.60) higher than French and Belgian prices. The minimum price for beams quoted by a Middlesbrough mill recently was £8 17s 6d f.o.b. per ton (1.70c per pound), whereas Belgian beams are quoted around £6 10s per metric ton (1.25c) f.o.b. Antwerp. But British buyers are becoming rather shy of continental products even at their present low prices, as they are not certain shipments will be made without much delay. On the other hand, Lorraine and Luxemburg mills have booked a considerable tonnage of orders for export lately and have withdrawn from the Belgian market already. When Belgians in turn became more or less saturated, British makers will stand a better chance. Furthermore, transportation conditions in Belgium continue to be unsatisfactory. Shipments which normally should take about three days to cross the country to Antwerp now take three weeks. The Antwerp docks themselves are congested and thousands of tons of material are sidetracked awaiting shipment. This situation causes deliveries in export markets to be considerably delayed.

The British home market is more satisfactory. Settlement of the dockers' strike appears to be at hand, in which case its duration will not have been long enough to divert foreign inquiries from England to a great extent. A certain delay in shipment of export orders now completed will result, but domestic business appears to have been somewhat stimulated. Ship plates have been quoted at £9 to £9 10s per ton (1.73c to 1.80c per pound) which is an advance of 7s 6d to 10s ($1.60 to $2.15) per ton. Scotch No. 3 foundry pig iron is priced at £5 7s 6d ($23.10). Several hundred tons of Scotch pig iron with a high percentage of silicon and low phosphorus have been sold to San Francisco at £5 12s 6d ($24.20) f.o.b., the freight being about 18s ($3.85) a ton. About 500 tons of wire rods have been sold to Japan at £9 10s ($40.85) c.i.f. Yokohama, the freight being about £2 ($8.60). German wire rods have been quoted at £7 10s ($32.25) f.o.b. Hamburg. Good orders for boiler plates have been received in England from Germany, 2000 tons have been sold at £13 (2.50c per pound) f.o.b., which is a good price. Several hundred kegs of continental nails have been sold at £14 17s 6d a ton (2.85c) c.i.f. Shanghai, the freight being about 45s ($9.70) and at £17 (3.25c) c.i.f. New Zealand. British nails are about £1 10s ($6.45) higher. America is occasionally selling high grade flat checkered head wire nails in England.

French exports of hematite pig iron are light since prices are about on a parity with British quotations at around £5 ($21.50) a ton f.o.b. France is selling nails and beams to South America and the Rhinish district and some finished steel products to Germany. German competition is not active at present in the various iron and steel markets. In fact, numerous inquiries for merchant bars have been received in France from German buyers since French prices appear to be more attractive. The Societe des Hauts Fourneaux et Fonderies de Pont-a-Mousson in France and the Societe de Conduites d'Eau, Liege, Belgium, have divided an order for 5000 tons of cast iron pipe for Buenos Aires. England is a good buyer of merchant iron bars in Belgium. Belgian basic bessemer bars are offered at £6 15s (1.29c per pound). The Belgian state railroad has issued tenders for 20,000 tons of nails; for the 50-kilo. rails the price of 695 Belgian francs ($24.80) per metric ton was offered by the Acieries Reunies de Burnach-Esch-Dudelange, known as the Arbed, in Luxemburg, while the Soc. Cockerill, acting for a group of Belgian mills, offered 697 francs a ton, 7 cents more.

It is reliably reported the South

Current Iron and Steel Prices of Europe

Last Reported Prices Converted into Dollars at Rates of Exchange, March 10

British Market

Corrected to Date by Cable

Home Market Prices. Gross Tons at Works or Furnace

	$	£ s d
SEMIFINISHED STEEL		
Billets, soft steel	32.03	7 10 0
Sheet bars	32.03	7 10 0
Wire rods	46.97	11 0 0
FINISHED STEEL		
Steel bars, England, ⅜ to 3-inch	40.57	9 10 0
Steel bars, England, ⅜ to 3-inch, for export	38.43	9 0 0
Plates, ship, bridge and tank, England	40.57	9 10 0
Plates, ship, bridge and tank, England, for export	38.43	9 0 0
Plates, ship, bridge and tank, Scotland	40.57	9 10 0
Plates, ship, bridge and tank, Scotland, for export	38.43	9 0 0
Beams, England	40.57	9 10 0
Beams, England, for export	36.30	8 10 0
Beams, Scotland	40.57	9 10 0
Beams, Scotland, for export	36.30	8 10 0
Sheets, black, 24 gage	57.65	13 10 0
Sheets, black, 24 gage, for export	55.51	13 0 0
Sheets, galvanized, 24 gage	79.00	18 10 0
Rails, 60 pounds and over	38.43	9 0 0
Rails, 60 pounds and over, for export	37.36	8 15 0
Tin plate, base box, 108 pounds	5.23	1 4 6
Steel hoops	51.24	12 0 0
Steel hoops, for export	46.97	11 0 0
PIG IRON		
Hematite, East Coast, Mixed Numbers	21.35	5 0 0
Hematite, West Coast, Mixed Numbers	22.63	5 6 0
Basic, Middlesbrough	20.28	4 15 0
No. 3 Foundry, Middlesbrough	19.86	4 13 0
No. 3 Foundry, Derby, Leicester, Nottingham	20.28	4 15 0
No. 3 Foundry, Northamptonshire	19.75	4 12 6
No. 3 Foundry, Staffordshire	20.28	4 15 0
No. 3 Foundry, Scotch	21.35	5 0 0
Ferromanganese, 76 to 80 per cent	72.59	17 0 0
COKE		
Yorkshire furnace	6.19	1 9 0
Yorkshire furnace, for export	5.98	1 8 0
Foundry	7.47	1 15 0
Foundry, for export	8.11	1 18 0

Where no separate export prices are given, same quotations apply to domestic and foreign business.

German Market

Prices Last Reported

	$	Pounds per metric ton (2205 lbs.)
PIG IRON		
Hematite	23.70*	5 11 0
Foundry, No. 3	19.86	4 13 0
Stahleisen, Siegen	21.99	5 3 0
Foundry, No. 1	20.28	4 15 0
Luxemburg Foundry, No. 3, export to Germany	13.33	355 francs†
COKE		
Lower Silesian furnace	7.26	1 14 0
Lower Silesian foundry	7.69	1 16 0
SEMIFINISHED STEEL		
Billets	24.77	5 16 0
Sheet bars	25.83	6 1 0
Wire rods	34.16	8 0 0
FINISHED STEEL		
Standard rails	28.18	6 12 0
Merchant bars	28.18	6 12 0
Structural shapes	28.18	6 12 0
Ship plates	31.38	7 7 0
Medium plates, 3 to 5 millimeters	34.80	8 3 0
Sheets, 1 to 3 millimeters	37.15	8 14 0
Tin plate, per box of 575 kilograms	6.62	1 11 0
Plain wire		Nominal
Bands and strips	34.80	8 3 0

All prices are f.o.b. furnace or works.
*German prices now are quoted in pounds, sterling.
†Quoted only in French francs.

French Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Hematite, Lorraine	17.84	475
Basic bessemer, Lorraine	14.46	385
Foundry, Longwy, No. 3, sand-cast	14.08	375
Foundry, Longwy, No. 3, chill-cast	14.46	385
Ferromanganese, 76 to 80 per cent	58.20	1,550
COKE		
French furnace	5.33	142
German furnace, f.o.b. frontier	5.39	143.5
French foundry	5.90	157
SEMIFINISHED STEEL		
Blooms	17.84	475
Billets	18.96	505
Sheet bars	19.34	515
FINISHED STEEL		
Standard rails	20.84	555
Merchant bars	21.40	570
Angles	24.60	655
Normal beams and profiles	24.60	655
Plates, ship and tank, 10 millimeters and thicker	24.03	640
Plates, bridge and tank, 5 to 10 millimeters	24.41	650
Sheets, black, 3 millimeters	25.91	690
Sheets, blue annealed, 2 millimeters	29.66	790
Shafting, cold-drawn, 40 to 60 millimeters	43.18	1,150
Bars, 2 per cent nickel steel	69.47	1,850

All prices are f.o.b. furnace or works.

Belgian Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Basic bessemer, Belgian	13.44	420
Basic open-hearth, Belgian	14.08	440
Gray forge, Belgian	14.72	460
Foundry, No. 3, Belgian	14.88	465
Foundry, No. 3, Luxemburg	13.44	420
Foundry, No. 3, Lorraine	13.44	420
SEMIFINISHED STEEL		
Blooms	18.72	585
Billets	20.16	630
Sheet bars	20.96	655
Wire rods	28.80	900
FINISHED STEEL		
Standard rails	22.24	695
Merchant bars	24.80	775
Normal beams and profiles	24.00	750
Plates, 5 millimeters and thicker	26.72	835
Sheets, black, 3 millimeters	28.00	875
Sheets, galvanized, 1 millimeter	68.00	2,125
Plain wire	38.40	1,200
Galvanized wire	48.00	1,500
Wire nails	40.00	1,250

All prices are f.o.b. furnace or works.

African government railways have given an order for 1300 tons of locomotive tires to Fried. Krupp A. G., Essen, Germany. The Krupp company competed for this business against both British and American manufacturers and their tender was 30 per cent less than the next lowest figure, which was offered by a British firm. Prior to issuing the invitation to bid, the high commissioner for South Africa in London, whose office handled the transaction, stated that the order would be placed with the firm submitting the lowest tender, irrespective of nationality. There has been considerable criticism of the South African government on behalf of British manufacturers but there is no indication at present that the order will not go through and be executed.

German Market Better but Prices Weak

European Special Service

BERLIN, Feb. 12.—During the past week further sales of bars to Japan have been made at £6 10s to £6 15s per ton ($27.95 to $29.02) f.o.b. Hamburg or Antwerp for shipment during March and April, but many of these shipments are of

Sterling—$4.30

Belgian origin. Ship plates have been sold at £7 10s per ton ($32.25), wire nails at £14 15s to £15 per ton ($63.42 to $64.60), and a small quantity of galvanized wire at £16 per ton ($68.80). Some orders for bars have been taken for South America and British India as well as regular deliveries to the Balkans and border states. Some fair tonnages of rails

have been sold to South America, South Africa and Java at £6 15s ($29.02) per ton f.o.b. Hamburg.

The slight revival in the German domestic market continues but there has been no further increase in home consumption. All quotations on the home market are now in rentenmarks except for Ruhr steel which is offered in francs or Czech crowns as a good deal of the steel in the hands of merchants is of foreign origin which can be sold only in exchange for actual foreign currency. Steel prices continue weak in anticipation of further reductions. There is a good demand for structural shapes and bars but operating conditions are bad and production continues below capacity. Most of the Siegerland mills have shut down as they are unable to compete with Luxemburg and Saar products. Owing to irregular operation of Ruhr mills there is a quantity of scrap iron on the market at low prices although large tonnages have been sold to France, especially in the Saar district.

Germany's exports of iron and steel products in November, 1923, were 122,396 metric tons compared with 121,396 tons in October, 117,913 tons in September, 236,709 tons in January, 1923, and 234,553 tons in November, 1922. Among the principal items exported in November were 30,677 tons of scrap, 11,345 tons of plates and sheets, 12,418 tons of bars and bands, 9638 tons of rolled and drawn wire, and 5244 tons of nails. A good deal of scrap was sold to France.

Imports in November were 143,068 metric tons compared with 165,403 tons in October, 100,907 tons in January, 1923, and 236,000 tons in November, 1922. This is the lowest figure since June, 1923. Among the principal items imported in November were 47,199 tons of bars and bands, 19,848 tons of rails and 25,329 tons of blooms, billets and sheet bars. Only 9367 tons of pig iron were imported in November compared with 29,616 tons in October.

St. Louis Iron and Steel Advantages Described

St. Louis as "the coming steel, iron and metal center," and its many industrial advantages, are described in a booklet issued by the Mercantile Trust Co. of that city. The booklet contains articles written by Harry Scullin, president Scullin Steel Co.; George W. Niedringhaus, vice president St. Louis Coke & Iron Co.; W. K. Kavanaugh, president Southern Coal, Coke & Mining Co.; Leonard A. Busby, president Iron Mountain Co.; L. W. Baldwin, president Missouri Pacific Railroad Co.; Clarence H. Howard, president Commonwealth Steel Co.; W. K. Bixby, formerly president of the American Car & Foundry Co.; H. J. Steinbreder, president Fulton Iron Works Co., and others engaged in manufacturing, mercantile and transportation development of the St. Louis district.

Some of the advantages of the location are enumerated in an article by Festus J. Wade, president Mercantile Trust Co., as follows: "Center of nation and center of great producing and consuming area; low freight rates and unsurpassed shipping facilities; favorable labor conditions; cheap and abundant coal at door; cheap and abundant electric power and waterway development.

Foreign Steel Gets Low Ocean Freights

London, March 3.—There has been some revival of interest in iron and steel freight rates from Europe to America owing to the sale of Belgian beams and pig iron to the United States. On this business it is understood pig iron will be handled from Antwerp to Philadelphia or Boston at 13s ($2.80) per ton. For finished steel the conference rate remains at £1 5s ($5.35) a ton but shippers in a position to charter tramps can probably obtain a rate around 15s to £1 ($3.25 to $4.30) a gross ton. The rate on tin plate from South Wales to the Atlantic coast is £1 5s a ton, or a little over 1s (21½c) per box.

On an inquiry for 5000 tons of billets from San Francisco, Scotch steelmakers were recently quoted about £1 ($4.30) a ton. Pig iron is still being handled from Antwerp to San Francisco at 17s 6d ($3.75) per gross ton in lots of 500 tons or more, the rate from Hamburg, Middlesbrough, or Glasgow being about 1s higher. Finished steel from Europe to the Pacific coast remains at around £1 10s ($6.45) per gross ton.

A vessel has recently been chartered to carry iron ore from Benisaf to Philadelphia at 6s 9d ($1.45) per ton, this rate being actually about 1s less than the charge to the United Kingdom or Germany. A vessel has been chartered to carry manganese ore from Poti on the Black Sea to Philadelphia at $4 per gross ton.

Canadian Mining

Given New Impetus At Convention—Iron Ore Famine Is Feared

Toronto, Ont., March 10.—The growing importance of the mining industry of Canada was reflected in the interest shown in the twenty-sixth annual convention of the Canadian Institute of Mining and Metallurgy held at the King Edward hotel, March 5-7. As much attention is being devoted to the development of the iron industry of Ontario several papers on the subject were of special interest.

The convention was opened with an address by Charles McCrea, Ontario minister of mines who said the government is anxious to assure investors that incoming capital will receive fair treatment, and all industries will be placed on the same basis of taxation.

Retiring President J. A. Dressen, Montreal, referred to the services rendered by members of the institute on the dominion fuel board, the advisory research council, and the iron ore committee. Prof. Ellis Thompson, University of Toronto, presented a paper on "Mineralography as An Aid to Mining," dealing with modern methods employed to solve important problems with the assistance of the microscope. W. S. Dyer discussed the coal deposits of the Minto basin in the central part of New Brunswick which, he stated, contained over 235,000,000 long tons of coal of good quality, for the manufacture of domestic coke.

The iron ore situation in Ontario was dealt with by G. W. McLeod who pointed out the need of encouraging industries in the province, instead of being dependent on the United States for ore. He urged that more geologists be employed in the search for ore. There are great quantities in the northern part of Ontario but it is of a low grade.

Dr. Charles Camsell, Canadian deputy minister of mines, stated that the importation last year of mineral products was valued at $381,200,000, or about 42 per cent of all importations.

The following officers were elected:

President R. C. Wallace, Winnipeg; vice presidents, C. M. Odell, Sydney; N. R. Fisher, Thetford Mines, Que.; G. C. Bateman, Cobalt, Ont.; A. A. Millar, Hills, Alta; T. Graham, Cumberland, land, B. C.

Tariff Reduction Gains Support in Canada

Toronto, Ont., March 10.—A reduction in the tariff on agricultural implements, and possibly on other manufactures was foreshadowed in the speech by the governor general at the opening of the dominion parliament. He declared that a

reduction of taxation is of first importance, and announced a policy of strict economy in administration.

While the adoption of this policy, in accordance with the pre-election pledges of the Liberal party may alienate some of its Quebec supporters, who favor protection, it is expected to secure the support of the Progressive members from the West. One of the principal planks of their platform was free agricultural implements and general downward revision of the tariff. The government has only a slender majority and has been somewhat weakened by defeats in the by-elections and recent cabinet changes. The support of the Progressives is necessary to its continuance in power. Just how far the government is prepared to go in the direction of tariff reduction to secure the adherence of the western free traders will not be known until the details are presented in the budget speech.

New Card Revises Cold-Finished Extras

PITTSBURGH, March 11.—Manufacturers of cold-finished steel bars and shafting have issued a new standard classification of extras effective March 10, superseding the card dated Aug. 18, 1919. The present cold-drawn base is 3.00c, Pittsburgh, but the base size formerly was 2¼ to 3 inches, whereas the new base size is 2¼ to 2⅞ inches. As to the extras for size in connection with rounds, squares and hexagons, the new card practically reflects the changes in the merchant steel bar card of July 1, 1923 while the new extras on flats represent a general advance of $5 per ton. Throughout the card minor adjustments have been made and inequalities of long standing have been removed. The new list is considered the most complete and most easily decipherable ever put out. Many of the new size extras are the same as those charged cold finishers on the merchant steel bar card, some are greater while others are less.

Under miscellaneous net extras, that for odd and intermediate sizes (not less than 25 cents per 100 pounds net extra), is the same as before and "odd" sizes have been more clearly defined.

To the paragraph on extras for chamfering, which are the same as formerly, the following sentence has been added: "Special prices will also be quoted on chamfering for other than 'automatic' screw machine use."

The extra for boxing for domestic shipment has been increased from 40 cents to 50 cents per 100 pounds while the extra for boxing for export shipment has been advanced from 50 cents to 75 cents net per 100 pounds. Burlapping, full length, is the same as it was, 25 cents per 100 pounds. The new card also shows an extra of 15 cents per 100 pounds for burlapping at both ends and in the middle shipments of less than carload total, 24,000 pounds, which is required by railroads.

Extras for accuracy are unchanged except for phrasing and further explanations to make the extras clearer.

The extras for piston rod and roller bearing steel are the same as hitherto but for special and high carbon open-hearth steels only two extras now are listed, where three formerly were applied. These new extras are applied on all "specified analysis" in open-hearth steels within the carbon ranges noted, except open-hearth screw stock.

Quantity differentials are advanced to conform with those in the merchant steel bar card of July 1, 1923. The extra on 1000 to 1999 pounds before was 15 cents per 100 pounds; it now is 20 cents, while the extra on less than 1000 pounds was 35 cents before and it now is 50 cents.

Extras for cutting have been advanced $3 per ton in rounds and hexagons in lengths 12 inches or longer.

Standard manufacturing tolerances, which hitherto have not been a part of the standard card of extras, have been included. The card is as follows:

NET EXTRAS FOR SIZE

Per 100 Pounds Net

ROUNDS

In inches

¼ to 5/32	$3.00
3/16 to 7/32	2.00
¼	1.25
5/16	1.00
⅜	0.90
7/16 to 9/16	0.70
⅝	0.55
11/16 to ¾	0.40
13/16 to 1 1/16	0.30
1⅛ to 1 7/16	0.25
1½ to 2 3/16	0.15
2¼ to 2⅞	Base
2 15/16 to 3⅜	0.30
3 7/16 to 3⅞	0.50
3 15/16 to 4⅜	0.80
4 7/16 to 4⅞	1.00
4 15/16 to 5⅜	1.25
5 7/16 to 5⅞	1.75
5 15/16 to 6⅜	2.25
6 7/16 to 7	3.00

SQUARES AND HEXAGONS

In inches

⅛ to 5/32	$5.00
3/16 to 7/32	4.00
¼ to 5/16	2.50
⅜ to 7/16	1.75
½	1.15
9/16	1.00
⅝	0.85
11/16 to 13/16	0.75
¾ to 1 5/16	0.70
1⅜ to 2	0.90
2 1/16 to 2 7/16	1.25
2½ to 3	1.50
3 1/16 to 4	2.00

FLATS

Thickness in inches	¼	5/16 to ½	9/16 to 23/32	¾ to 1	1 1/16 to 1½	1 9/16 to 3	Wider than 3
⅛ and 5/32	$8.50	$6.50	$5.50	$4.50	r3.50	$3.00	$3.50
3/16 to 5/16	7.75	5.75	5.25	3.75	2.75	1.75	3.00
⅜ to 7/16	...	4.75	4.25	2.75	2.75	1.75	2.50
½ to 9/16	...	....	3.25	1.75	1.75	1.50	2.50
⅝ to 11/16	...	....	2.75	1.50	1.50	1.50	2.50
¾ to 15/16	...	....	....	1.50	1.50	1.50	2.50
1 to 1 7/16	...	....	....	....	1.50	1.50	2.50
1½ to 1 11/16	...	....	....	....	....	1.50	2.50
1¾ to 1 15/16	...	....	....	....	....	1.50	2.50
2 to 2 15/16	...	....	....	....	....	1.50	2.50

MISCELLANEOUS NET EXTRAS

EXTRA FOR ODD AND INTERMEDIATE SIZES.

The following sizes in rounds, hexagons and squares shall be considered standard:

By 64ths to 1 inch, inclusive.

By 32nds, 1 1/32 to 1 31/32 inches, inclusive.

By 16ths, 2 inches to maker's limit.

All odd and intermediate sizes (excepting those allowing a total tolerance of 0.008-inch and such specifications shall be for not less than 2000 pounds of a size, not less than 25c per 100 pounds net extra, in addition to the usual extras for accuracy, etc.

All specified diameters exceeding standard sizes by more than 0.001-inch are considered "odd" and subject to the above extra.

EXTRAS FOR CHAMFERING. (For Automatic Screw Machine Use Only).

In inches	Per 100 Pounds Net Rounds	Hexagons and squares
7/16 to ⅝	$0.13	$0.15
11/16 to 15/16	0.10	0.13
1 to 2	0.065	0.115
2 1/16 and larger	0.04	0.10

These extras apply on lengths 10 feet and longer and one end of bar only. If both ends of bars are chamfered, these extras are doubled. For sizes smaller than 7/16-inch and bars shorter than 10 feet, special prices will be quoted. Special prices will also be quoted on chamfering for other than "automatic" screw machine use.

BOXING AND BURLAPPING.

Boxing (minimum 75c), domestic shipment, $0.50 per 100 pounds net.

Boxing (minimum $1), export shipment, $0.75

per 100 pounds net.

Burlapping (minimum 25c), full length, **$0.25** per 100 pounds net.

Burlapping (minimum 25c), as required by railroads, **$0.15** per 100 pounds net.

The railroads require all shippers to burlap (both ends and middle) all less than carload shipments weighing less than 24,000 pounds.

EXTRAS FOR ACCURACY.

1.—For accuracy from exact size to 0.0015-inch under, or from exact size to 0.0015-inch under to 0.001-inch over, sizes 3-inch diameter and smaller (standard, odd and intermediate sizes) **$0.25** per 100 pounds net.

For this accuracy, sizes larger than 3 inches, special prices will be quoted.

2.—For accuracy from exact size to 0.001-inch under, or from exact size to not more than 0.001-inch either way, sizes 2½-inch diameter and smaller (standard sizes only) **$0.50** per 100 pounds net.

For this accuracy, sizes larger than 2½ inches, special prices will be quoted.

3.—For accuracy within 0.0005-inch either way and from exact to 0.001-inch over size, sizes 2-inch diameter and smaller (standard sizes only) **$1.00** per 100 pounds net.

For this accuracy, sizes larger than 2-inch, special prices will be quoted.

4.—For accuracy 0.001-inch either way or from exact size to 0.001-inch over, or from exact size to 0.001-inch under, sizes 2-inch diameter and smaller (odd and intermediate sizes only) **$1.00** per 100 pounds net.

For this accuracy, sizes larger than 2-inch, special prices will be quoted.

5.—The above "Extras for Accuracy" apply to Rounds only, and in commercial grades 0.30 per cent carbon and less. Rounds 0.31 per cent carbon and over, also squares, hexagons and flats in low carbon commercial grades are subject to double extras according to the accuracy limits specified.

PISTON ROD STEEL

Uniformity to size and carefully selected surface finish—**50c** per 100 pounds net extra, in addition to usual extras for accuracy, short and long lengths.

ROLLER BEARING STEEL—

$1.00 per 100 pounds net extra.

EXTRAS FOR SPECIAL AND HIGH CARBON OPEN-HEARTH STEELS

Specified analysis—Carbon 0.30 per cent and less, **25c** per 100 pounds net.

Specified analysis—Carbon 0.31 per cent to 0.50 per cent, **50c** per 100 pounds net.

These extras apply on all "specified analysis" in open-hearth steels within the carbon ranges noted, excepting standard "open-hearth screw stock."

QUANTITY DIFFERENTIALS

All specifications for less than 2000 pounds of a size will be subject to the following extras, the total weight of a size ordered to determine the extra, regardless of length and the exact quantity actually shipped:

1000 to 1999 pounds, $0.20 per 100 pounds net.

Less than 1000 pounds, **$0.50** per 100 pounds net.

EXTRAS FOR LONG AND SHORT LENGTHS

Per 100 pounds net

In inches	Rounds	Squares	Hexagons	Flats
3 to 5 15/16....	$1.50	$1.50	$1.50	$3.00
6 to 11 15/16...	0.75	0.75	0.75	1.50
12 to 23 15/16..	0.45	0.60	0.45	0.75
24 to 59 15/16..	0.30	0.30	0.30	0.40

Lengths longer than 24 feet and less than 30 feet **$0.50**

30 feet and less than 35 feet..... **1.00**

35 feet and less than 40 feet..... **1.50**

40 feet and less than 45 feet..... **2.00**

45 feet and longer..... **2.50**

Extras for long lengths apply on rounds, squares, hexagons and flats.

FREIGHT ALLOWANCES AND DELIVERY

The price quoted is base, Pittsburgh. If shipment is made from a point other than Pittsburgh (or Pittsburgh district), the freight from Pittsburgh to destination will be added, and the freight from shipping point to destination deducted. No freight to be allowed or paid by shipper on car blocking.

STANDARD MANUFACTURING TOLERANCES

Cold finished steel bars (bessemer and open-hearth screw stock and special open-hearth specifications 0.50 per cent carbon and less).

Diameter in inches	Variation in Size—Rounds and hexagons Under	Rounds and hexagons Over	Squares Under	Squares Over
Up to 0.3 incl....	0.002	0	0.0025	0.0025
Over 0.3 to 1 incl.	0.003	0	0.0025	0.0025
Over 1 to 2½ incl.	0.004	0	0.004	0.004
Over 2½.....	0.005	0	0.005	0.005

Diameter in inches	Flats—Width and thickness Under	Over
Up to 0.3 incl.....	0.003	0.003
Over 0.3 to 1 incl.....	0.003	0.003
Over 1 to 2¼ incl.....	0.004	0.004
Over 2½.....	0.005	0.005

SHAFTING

(Turned and polished, cold drawn and cold rolled)

1 inch and under, from exact size to not more than 0.002-inch under.

1 1–16-inch to 2-inch incl., from exact size to not more than 0.003-inch under.

2 1–16 inches to 4 inches incl., from exact size to not more than 0.004-inch under.

4 1–16 inches to 6 inches incl., from exact size to not more than 0.005-inch under.

Ingot Production

In February Gains 180,000 Tons Over January Despite Short Month

Steel ingot production in February totaled 3,780,663 gross tons and was the highest since last May when the output was 4,195,800 tons, according to statistics compiled by the American Iron and Steel institute from figures supplied by companies which in 1922 produced 95.35 per cent of the actual output for the country. As compared with the 3,599,938 tons produced in January, the gross February output showed a gain of 180,725 tons, or 5 per cent. The increase appears significant in view of the fact that February was a month of 25 working days as against 27 in January. Actual production of the reporting companies in February was 3,604,862 tons, a gain of 172,321 tons over the 3,432,541 tons of the preceding month.

Reduced to an average daily basis, the calculated February output of ingots was at the rate of 151,227 tons, an increase of 17,896 tons, or 13.4 per cent, over the 133,331-ton daily rate of January. This was the highest daily output since last May when production was at the rate of 155,400 tons per day and was only 6549 tons per day below the historic high rate of 157,776 tons of last April.

On the basis of 151,227 tons per day in February and 311 working days in the year, the indicated annual rate of production during the month was 47,030,000 tons. This was a gain of 5,570,000 tons over the 41,460,000-ton annual rate indicated in January. Against the record rate of 49,060,000 tons last April, the February rate was 96 per cent.

Comparisons of steel ingot production by months for 1923 and the first two months of 1924, as compiled by the institute are as follow:

Steel Ingot Production 1923-24

1923	Open-hearth	Bessemer	All other	Monthly production	Calculated monthly production all companies	No. of working days	Approximate daily production all companies	Change, per cent daily production
				95.35 per cent of industry reporting				
Jan.....	2,906,892	728,270	9,467	3,644,629	3,822,369	27	141,569	+ 7.1
Feb.....	2,613,564	669,903	10,797	3,294,264	3,454,918	24	143,955	+ 1.7
March.....	3,046,309	799,525	12,841	3,858,675	4,046,854	27	149,883	+ 4.1
April.....	2,974,579	772,485	13,933	3,760,997	3,994,412	25	157,776	+ 5.2
May.....	3,136,558	847,418	16,719	4,000,695	4,195,800	27	155,400	— 1.5
June.....	2,821,239	737,845	15,483	3,574,567	3,748,890	26	144,188	— 7.1
Total 6 mos..	17,499,141	4,555,446	79,240	22,133,827	23,213,234	156	148,803	
July.....	2,658,449	680,884	11,496	3,350,829	3,514,241	25	140,570	— 2.5
Aug.....	2,796,370	701,059	9,326	3,506,755	3,677,771	27	136,214	— 3.1
Sept.....	2,551,460	613,709	8,602	3,173,801	3,328,580	25	133,143	— 2.2
Oct.....	2,724,371	649,452	9,163	3,382,986	3,547,966	27	131,406	— 0.9
Nov.....	2,343,378	616,335	9,309	2,969,012	3,113,804	26	119,762	— 8.8
Dec.....	2,130,613	570,004	10,912	2,711,529	2,843,764	25	113,751	— 5.0
Total 12 mos.	32,703,802	8,386,889	138,048	41,228,739	43,239,369	311	139,033	
1924				95.35 per cent of industry reporting				
Jan.....	2,752,932	667,032	12,577	3,432,541	3,599,938	27	133,331	+17.2
Feb.....	2,894,872	695.905	14,085	3,604,862	3,780,663	25	151,227	+13.4

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Steel as a Business Barometer

PIG iron always has been regarded as one of the most important factors reflecting economic trends and tendencies. It has won its reputation as a business barometer through its long record as a faithful index to underlying forces. In the first place, pig iron is a basic commodity peculiarly responsive to changes of trade in a country so highly industrial as the United States. Again, the characteristics of blast furnace operation are such that business disturbances of a temporary character pass by almost unnoticed. Major industrial fluctuations, on the other hand, are recorded in their true perspective and therein lies the usefulness and accuracy of pig iron in gaging business activity.

As a yard stick for measuring recovery following periods of curtailed operations, however, pig iron production now has become less useful than steel ingot production. When demand for steel products picks up, steelmaking capacity is quickly pressed into service at a rate sufficient to satisfy that demand. As the need for steel diminishes, the steelmaking units, with equal rapidity of change, are shut down or operated at a slower rate. Producers may and frequently do stock pig iron because a blast furnace may not be readily put in or out of operation, whereas it is unusual to accumulate crude steel after the demand slumps. Thus, steel ingot production reflects almost immediately the changing currents in business. Pig iron and steel production figures for January and February of this year indicate to what extent this is true. In January pig iron output gained 3.54 per cent over December while that of steel ingots increased 17.15 per cent. The corresponding gains of February pig iron and steel ingots over January were 8.64 and 13.42 per cent respectively. These figures show how pig iron has lagged behind steel in the recovery.

Steel and pig iron, it is certain, are not as closely related today as they were 10 years ago. During recent years the increasing use of scrap in steelmaking has reduced the relative tonnage of pig iron required for this purpose. In 1913 and 1914 the output of pig iron and steel were about equal. At present, pig iron production represents only approximately 85 per cent of the steel ingot total. The following table shows very effectively the declining ratios of coke and anthracite pig iron to steel ingots in the period from 1913 to 1924.

Year	Pig iron gross tons	Steel ingots, gross tons	Ratio of pig iron to steel, per cent
1913	30,652,767	30,280,130	101.2
1914	22,970,926	22,819,784	100.6
1915	29,573,161	31,284,212	94.5
1916	39,019,123	41,401,917	94.3
1917	38,164,976	43,619,200	87.4
1918	38,437,488	43,051,022	89.3
1919	30,578,730	33,694,795	90.8
1920	36,400,968	40,881,392	89.1
1921	16,506,564	19,224,084	85.8
1922	26,850,844	34,568,418	77.9
1923	40,025,850	43,239,369	92.8
January, 1924	3,015,480	3,599,938	83.9
February, 1924	3,064,536	3,780,663	81.2

Relative rates of production, of growth of per capita consumption and other points of comparison all declare the fact that under conditions of present day life and advancement the United States is operating on a steel and not on a pig iron basis.

Price Stability Features Steel

EXTRAORDINARY stability of steel prices has been the striking feature of the market situation of the past year. Under the swell of buying which took place during the first four months of 1923, finished steel prices rose $8 to $10 per ton and reached their crest in April and May. Substantially speaking, the market values of plates, shapes and bars, sheets, tin plate, wire products and tubular products since have remained unchanged or have been subjected to a minimum of fluctuation.

The group price line for finished steel has been uniquely horizontal the past 10 months and has few comparisons in recent years apart from the period in 1917 and 1918 when all iron and steel prices were under government control.

This fact probably tends better to portray the character and occasion of steel buying in 1923. The bookings by the mills under the broad market of the first four months of the year which afterward tapered off sharply, were sufficient to lay the backlog for the stability of the market during the remaining months until buying was revived in December. No doubt the re-

cent consolidations which have placed in fewer hands the control of a large fraction of total steel capacity also have been a factor making for greater underlying market stability.

While steel prices have been relatively firm for months, the field of iron and steel selling, taken as a whole, has exhibited considerable fluctuation. This is illustrated by the range in IRON TRADE REVIEW'S composite of 14 leading single products embracing not only finished steel but also semifinished material and pig iron. The latter two classifications provide perhaps 30 to 35 per cent of the total tonnage transactions in iron and steel. This composite figure, reaching its high point in May at $47.52, declined to $43.02 in December, rose to $43.49 in February of this year and now is showing a slight sinking tendency. Even on this basis the whole iron and steel market has been unusually stable during the past year. Its fluctuation, the composite shows, from high to low in 1923 was $4.50 per ton compared with $10.93 in 1922, $17.99 in 1921, $15.24 in 1920 and $7 in 1919.

Since iron and steel buyers with some exceptions, are not committing themselves very far into the future, the present narrowed range of price fluctuations points with certainty to the well-sustained volume of current consumption.

Comparing Ore and Iron Prices

AS THE time approaches for open market sales of Lake Superior iron ore, a comparison of the price position between pig iron and ore might lead to the conclusion that a reduction on ore is necessary to obtain a normal relationship between the two products.

When ore quotations were announced March 24, 1923, basic pig iron was selling at $31, valley; bessemer iron was $31, and No. 2 foundry iron $31. Today basic iron is around $22, valley; bessemer and No. 2 foundry iron $23.50. Under such circumstances it is difficult to make some furnace operators believe that there should not be a revision in ore prices.

This basis of comparison has unstable features, owing to the rise and fall of pig iron, while ore prices are supposed to apply uniformly on shipments throughout the season. Nevertheless, it is a strong point in the conclusions reached by furnace operators. And that it is considered by ore producers also is evident from the fact offers of 250,000 tons or more were made to the Ford Motor Co. recently at last year's prices.

Resistance to a reduction comes from increased operating costs. The mine operators must pay a larger share of taxes, including a special occupation tax of 12 cents a ton; and they also have advanced wages.

The quotation on the standard Mesabi nonbessemer grade last year was $5.55, somewhat less than the traditional "one-fifth of the price of basic," $31 as of March 24. In 15 years prior to that year, on the average, Mesabi nonbessemer was 20.5 per cent of the price of basic at the date of the ore buying movement. So while the ore producers' proportion was below the average last year, the position now is altered. If the present price of basic is compared with the Mesabi nonbessemer ore price of 1923, the proportion of the ore price is one-fourth.

Ore quotations last year represented an advance of 50 cents over 1922. Reverting to June, 1922, when the ore prices were announced for that year, basic iron was selling at $25, valley; bessemer $25 and No. 2 foundry iron $24, all higher than today.

This is merely a review of the price position of pig iron and iron ore at the time it is customary to purchase ore for the season. The question arises whether it may not be a short-sighted policy to consider the present pig iron price as a measurement for what ore should be. A cut in the price of ore may entail more important economic consequence, for many large consumers of ore probably would consider it a distinctly unfavorable factor against the stabilization of the iron and steel market and business in general.

South Creates Own Iron Market

BIRMINGHAM once was the virtual basing point for all pig iron prices in the United States. While the quotation did not state it, the fact was that any price named to a user was influenced by the figure at which Birmingham makers were willing to sell. This was because of the tremendous production and the relatively small consumption in the South. Southern makers enjoying the natural assembly of iron, fuel and flux in the same section could make iron more cheaply than any competitor in less favored locality, and this went far toward balancing the freight cost of reaching consuming markets.

But in the years while iron has been made in the Birmingham area a change has taken place. Melters have been attracted by low prices and certainty of supply and more and more southern iron has been consumed close to its point of production. Pressure to dispose of great tonnages outside the home market has lessened until producers find sufficient call at home to absorb more and more of their tonnage.

A furnace company that 10 years ago shipped all its iron north of the Ohio river now finds market for four-fifths of it in the south and other makers are selling their entire production at home, except for relatively small lots sold to consumers in the North who are old customers and desire some southern iron for their accustomed foundry mixture.

As a result northern furnaces find less competition from the South and southern furnaces no longer feel the need to slash prices and compete with distant markets, thereby cutting their profit to the bone.

This is one phase of the localizing process now going on in the pig iron industry, which is keeping production close to its point of origin and is limiting competition between producing centers.

Current Statistics of Industry

Jones & Laughlin Present First Annual Report

Net income of the Jones & Laughlin Steel Corp., Pittsburgh, was $10,913,878 in 1923 as shown by the first annual report of the company issued to stockholders. The Jones & Laughlin Steel Corp., succeeded the Jones & Laughlin Steel Co., under reorganization plans on Jan. 1, 1923. The report shows a total surplus of $30,808,275. The balance sheet shows inventories of $27,970,146, with cash and government securities of more than $35,000,000. Current assets of $71,685,471 compare with current liabilities of $9,731,944. The company properties are worth $105,810,735, according to the report. The statement as presented to stockholders follows:

Net earnings	$16,727,176
Depreciation and depletion	4,746,868
Interest	1,066,430
Net income	10,913,878
Preferred dividends	3,879,873
Surplus adjustments	610,350
Final surplus for year	6,423,655
Previous surplus	24,384,620
Total surplus	$30,808,275

BALANCE SHEET

Assets

Real estate, plants, mines, steamships, rolling stock, etc. (net)		$105,810,735
Bonds and stocks of other companies		855,201
Real estate and sales contracts and mortgages and due on sales of preferred stock to employes		1,702,484
Accident compensation, fire insurance and pension system fund assets		1,350,384
Current assets:		
Cash on hand	$11,856,764	
U. S. government obligations	23,240,900	
Accounts receivable	8,048,053	
Bills receivable	569,608	
Inventories	27,970,146	71,685,471
Deferred charges		12,025
Total		$181,416,300

Liabilities

Capital stock		
Preferred — Authorized and issued	$60,000,000	
Less owned by the corporation	4,154,500	$55,845,500
Common — Authorized and issued	60,000,000	
Less owned by the corporation	2,668,000	57,332,000
Funded debt		19,735,000
Current liabilities		9,731,944
Reserves for accident compensation, fire insurance fund and pension system		1,297,583
Other reserves, except depreciation and depletion		6,665,998
Unappropriated surplus		30,808,275
Total		$181,416,300

Gulf Steel Expands

The Gulf States Steel Co., Birmingham, Ala., in its pamphlet report for 1923, shows net profits of $1,576,521 for the year after charges and federal taxes. This compares with $958,207 in 1922. The company employed an average of 2812 men in 1923 against an average of 2144 in 1922. Average earnings per man were $1436 compared with $1177 in 1922.

Furniture Shipments Gain

Washington, March 11—Shipments of steel furniture in January, valued at $1,592,338, were the largest since March 1923 according to reports of 22 manufacturers to the department of commerce. Shipments in December were valued at $1,455,836 and those in November $1,339,425. Following is a comparison of values of shipments since January 1922.

	1922	1923	1924
January	$983,834	$1,362,470	$1,592,338
February	967,125	1,307,173	.....
March	1,087,228	1,709,206	.....
April	1,058,382	1,520,286	.....
May	1,056,735	1,506,072	.....
June	1,015,463	1,401,950	.....
July	945,768	1,247,605	.....
August	943,087	1,345,147	.....
September	1,062,495	1,273,259	.....
October	1,227,447	1,365,600	.....
November	1,204,310	1,339,425	.....
December	1,376,152	1,455,836	.....

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Unfilled Tonnage Shows Third Increase

For the third consecutive month, unfilled bookings of the United States Steel Corp. have increased, the total as of Feb. 29 being 4,912,901 tons. This is an increase of 114,472 tons, or 2.3 per cent over January. Further comparisons follow:

Date	Total	Change, tonnage	Change, per cent
Feb. 29, 1924	4,912,901	114,472+	2.3 +
Jan. 31, 1924	4,798,429	350,183+	7.8 +
Dec. 31, 1923	4,445,339	76,755+	1.7 +
Nov. 30, 1923	4,368,584	304,241—	6.5 —
Oct. 31, 1923	4,672,825	362,925—	7.2 —
Sept. 30, 1923	5,035,750	378,913—	6.99 —
Aug. 31, 1923	5,414,663	496,100—	8.4 —
July 31, 1923	5,910,763	475,498—	7.4 —
June 30, 1923	6,386,261	595,090—	8.5 —
May 31, 1923	6,981,351	307,158—	4.21 —
April 30, 1923	7,288,509	114,823—	1.5 —
Mar. 31, 1923	7,403,332	119,343+	1.63 +
Feb. 28, 1923	7,283,989	373,213+	5.40 +
Jan. 31, 1923	6,910,776	165,073+	2.31 +

Malleable Output Gains

Washington, March 11.—Production of malleable casting in January, totaling 64,379 tons, was the highest reached since August, when 68,069 tons were produced, according to reports of the department of commerce. The January operations were 58.6 per cent of total capacity operated, as compared to 46.5 per cent in December when but 49,724 tons were produced.

	Total tons produced	Per cent of capacity	Total tons booked	Monthly capacity
May	64,726	71	52,898	91,174
June	65,168	67.7	42,067	96,240
July	57,881	58.9	41,723	98,241
August	68,069	66.0	39,830	103,068
September	60,930	59.9	38,636	101,750
October	62,238	59.9	48,621	103,837
November	52,727	49.1	37,231	107,350
December	49,724	46.5	45,012	106,825
January 1924	64,379	58.6	73,964	109,798

Stoker Sales Again Gain

Washington, March 11.—February sales of mechanical stokers, totaling 110, gained 19 over January when orders amounted to 91, according to figures of the department of commerce. Following is a monthly comparison of sales in 1923 and 1924:

1924	Stokers sold	Fire tube boilers	Water tube boilers
January	91	7	84
February	110	11	99
1923			
January	145	29	116
February	129	9	120
March	120	9	111
April	167	14	153
May	194	14	180
June	135	6	129
July	129	21	108
August	135	18	117
September	99	16	83
October	88	14	74
November	50	10	40
December	73	17	56
Total 1923	1,464	177	1,287

The Business Trend

March 13, 1924

BY JOHN W. HILL, FINANCIAL EDITOR

THE year is unfolding two indications of healthy business conditions. One is the continuance of heavy consumption and the other is the absence of speculative movements in commodities.

Early in the year, inflationary tendencies appeared to be creeping into the situation. Credit resources were, and still are, enormous. Some prices moved forward and production swung upward with great vigor in a number of lines.

That inflation has not appeared is most convincingly shown by the decline in commercial loans of about 750 leading banks in the country and by the decline of commodity prices.

Large consumption is reflected in the unmatched record of winter car loadings, by heavy retail and wholesale sales and by large mail order business. Car loadings in February exceeded February of 1923 by 8 per cent. One large mail order house reports a February business 38 per cent ahead of last year.

Prices Are Checked

The price movement is of special significance. Early in 1923 commodity values were bounding forward. Repetition of this tendency at the beginning of 1924 was early checked. Wholesale price indices are uniform in showing either stability or declines in January and February.

The movement of the indexes, of course, masks uneven and conflicting individual price fluctuations. They do measure the general swing, however. Bradstreet's index on March 1 was 4 per cent lower than it was on Dec. 1. It is 7.4 per cent below the level of one year ago.

The rise of the index in the 12 months preceding March 1, 1923 was 20 per cent. The price situation reflects the prevailing conservatism which is preventing over-buying and the illusion of shortages or boom times.

Outputs Are High

Industrial outputs continue high and in a few instances probably are outrunning consumptive needs. This is indicated by the increase in stocks of manufactured goods, as measured by the department of commerce.

However, with speculative commodity hoarding and inflation absent and with purchasing power exceedingly high serious overproduction is unlikely to develop. Any decrease in consumption will be immediately signaled by a reduction of the hand-to-mouth buying.

Meanwhile, financial and business sentiment is mixed. The tax program is still hanging fire. Washington probes are multiplying. French francs have plunged to new depths and a crisis in French affairs impends. Hope for Europe is centered upon the forthcoming report of the Dawes committee of experts.

The Barometer of Business

Weekly Composite

	Last week	Week before	One mo. ago	One year ago	1913
Business failures..	364	328	379	406	...
Cash ratio Fed. Res. System, %.	80.5	80.6	82.1	76.2	...
Loan rate, 4-6 mo. N. Y. %.....	4½-4¾	4½-4¾	4¾-5	4¾-5	5½-6
Aver. 25 industrial shares	$111.68	$111.12	$113.96	$116.03	$58.19
Aver. 25 railroad shares	$86.28	$60.22	$60.88	$65.06	$82.90
Aver. 40 bonds....	$77.65	$77.80	$78.19	$78.42	$93.00
Car loadings, week ended Feb. 23..	845,898	935,109	895,276	830,107	*783,295
Bank debits, 246 cities (000 omitted) *1920	$10,930,887	$8,377,626	$10,398,997	$8,377,626	.....

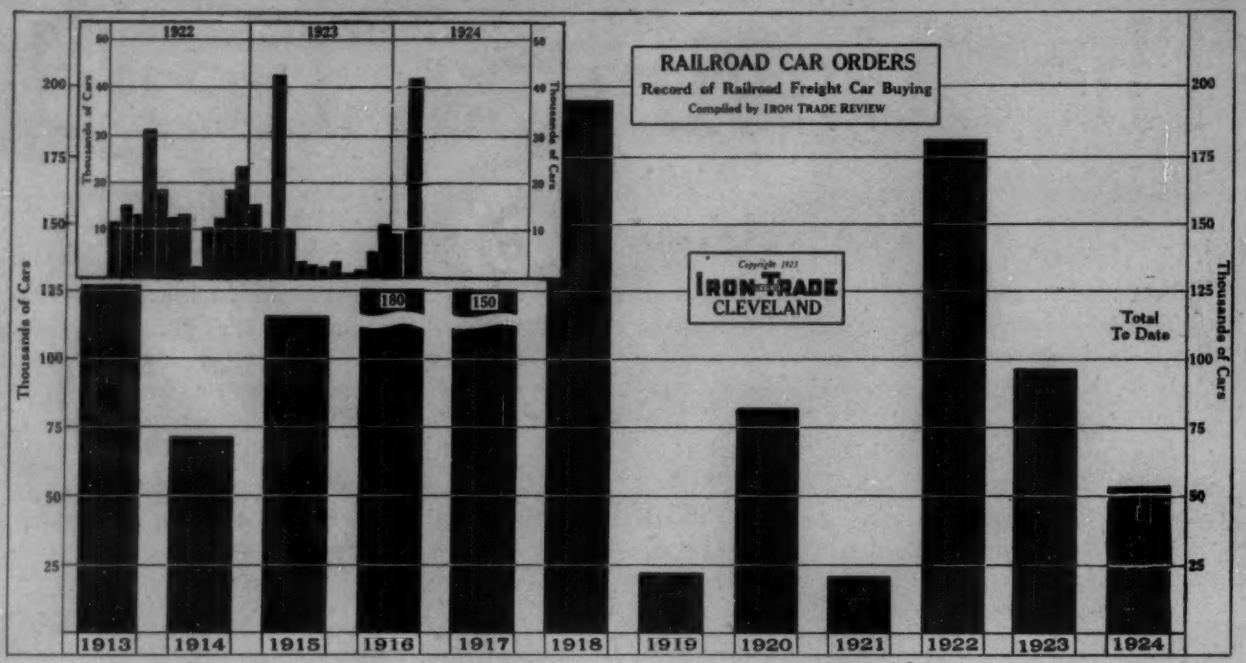
Foreign Exchange (Demand)

	Normal	Last week close	One week before	One month ago	One year ago
Sterling	$4.86	$4.25	$4.29	$4.31	$4.68
Francs	19.3c	3.42c	4.18c	4.57c	6.04c
Lira	19.3c	4.13c	4.34c	4.53c	4.79c

Monthly Comparison

	February	Month before	Year ago	Mo. average 1913
Dodge Building awards in 27 states (sq. ft.)	48,036,100	48,867,000	30,654,000	31,250,000
Business failures: Number	1730	2108	1508	1336
Liabilities	$35,942,037	$51,272,508	$40,627,939	$22,732,000
Exports	‡$394,000,000	$426,798,000	$335,000,000	$233,195,000
Excess of gold imports	‡$44,993,832	$31,929,000	$24,347,965	†$630,716
Bureau of labor price index...	$151	151	150	100
Bradstreet's price index	139.4	142.7	149.6	100
Economist's British price index	§171.5	168.5	159	100
Nat'l Industrial Con. board living cost index	$164.6	165	161.4	$100
New incorporations	‡$878,704,700	$955,632,000	$909,693,800	$172,131,000
Railroad net earnings	*$72,000,000	$86,130,000	$79,155,000	$59,301,000

†Excess of gold exports. *December. ‡July, 1914. §January.

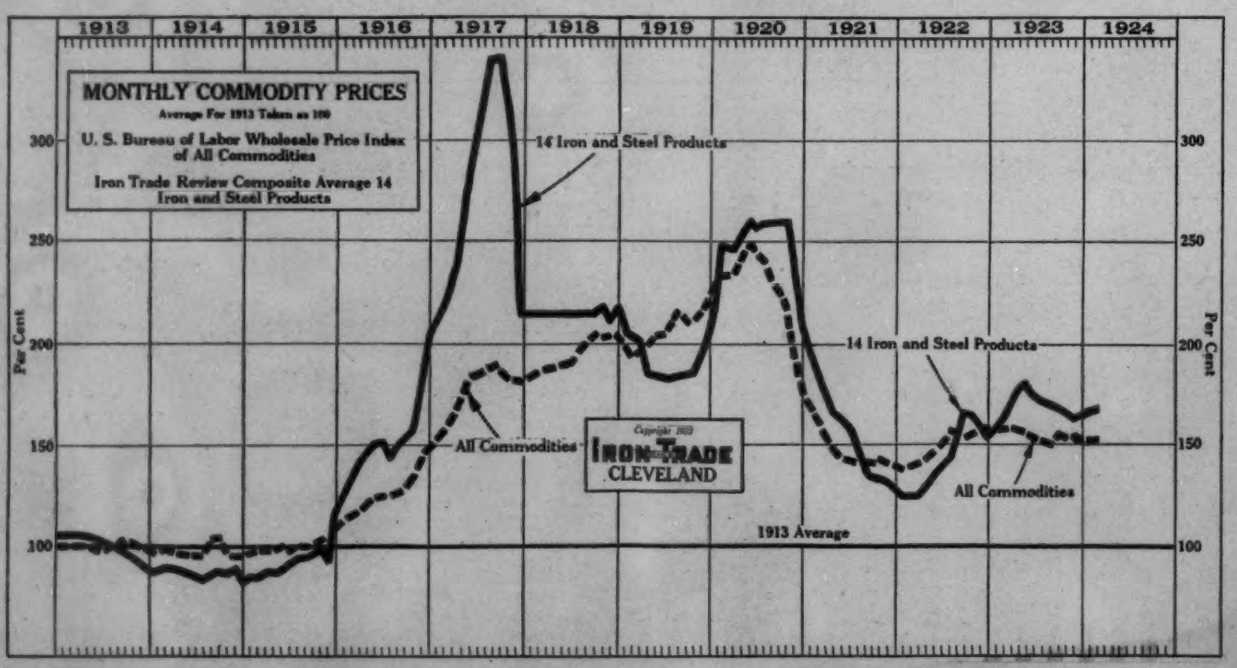


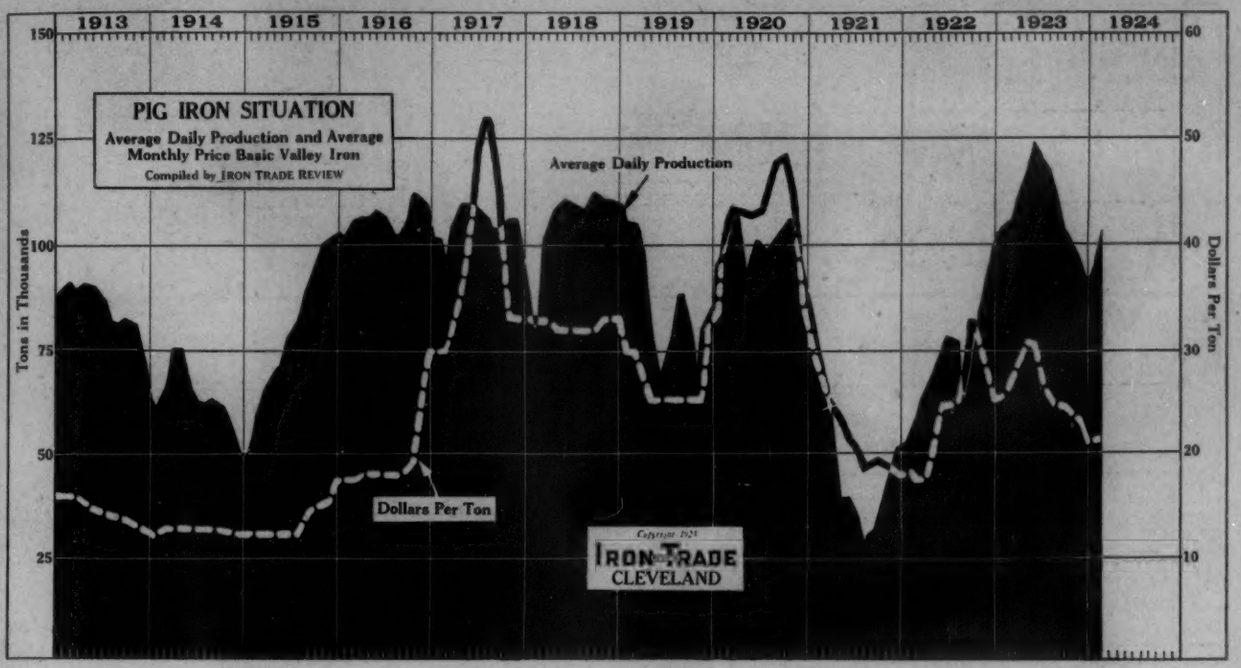
Car Orders

DURING February the country's railroads awarded contracts for 41,346 freight cars. This was the largest number ever ordered in any February in all of the 12 years for which there is a monthly record. It actually is the heaviest volume of awards since March 1923, when the total reached 42,479 cars. With that exception the buying of cars in February rose to the highest level of any month since the large order of 70,000 cars placed by the government controlled railroads in May 1918. Unprecedented winter traffic totals continue.

Commodity Prices

THE general average of wholesale commodities, as compiled by the bureau of labor statistics, is 51 per cent above 1913. The composite average of 14 iron and steel products, computed by Iron Trade Review is 64 per cent above 1913. Steel price movements in 1924 are in striking contrast with those of 1923. The rise of the composite average since December has been less than 1 per cent. In the same period last year a sweeping advance of 12 per cent occurred. Recently the steel price structure has softened.



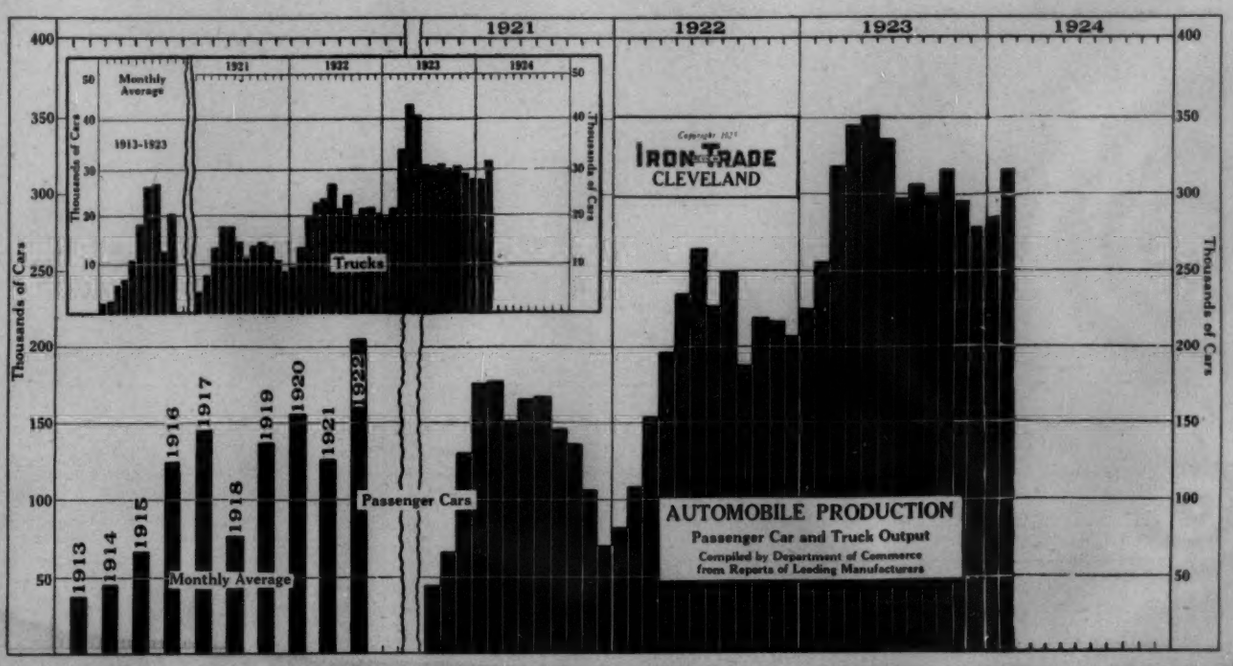


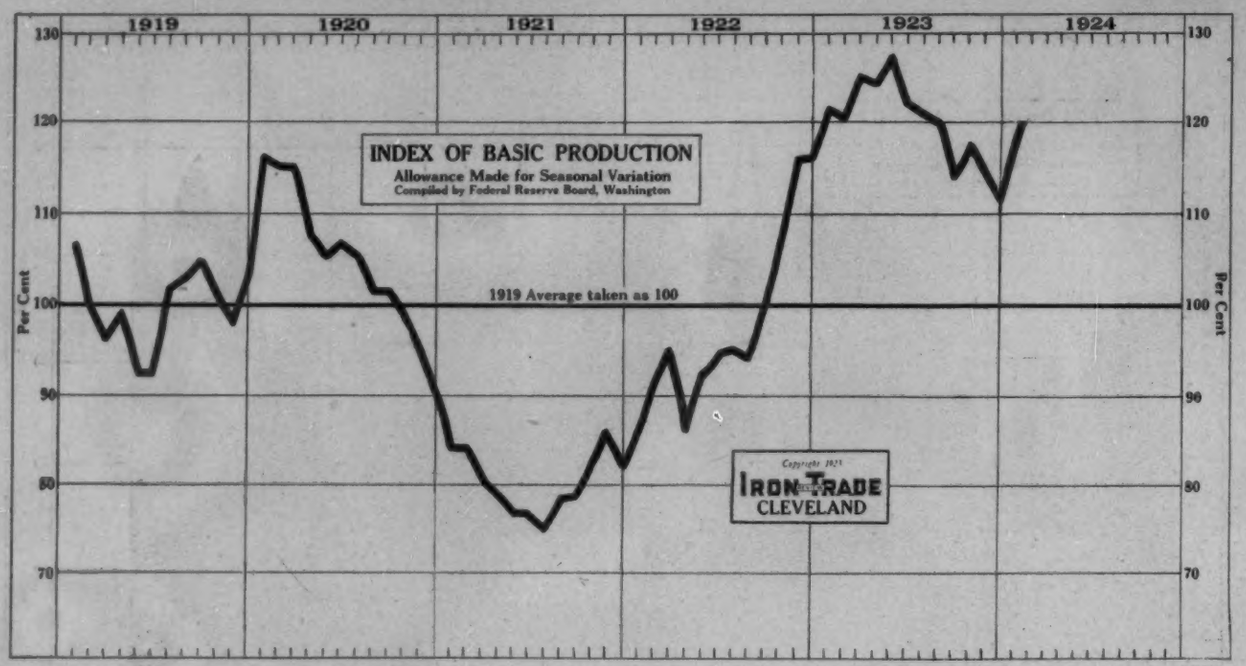
Pig Iron Situation

FEBRUARY pig iron output was at the daily average rate of 105,673 tons. This compared with 97,273 tons in January and 106,925 tons in February 1923. The gain over the December level was 13 per cent. Last year the increase from December to February was only 6 per cent, showing the much more rapid upswing in 1924. Production in two months has regained 38 per cent of the ground lost in the decline of the preceding seven months. Iron prices are higher than last December, but have softened recently.

Automobile Output

THE production of automobiles continues to make gigantic strides. In February preliminary reports indicate a total of 349,000 passenger cars and trucks. This was a gain of 10 per cent over January and of 26 per cent over February 1923. It was the heaviest output ever recorded in any previous February. Manufacturers and dealers are putting a portion of current production in stock against an expected large spring demand. Most producers are taking a conservative view of the later months of the year.



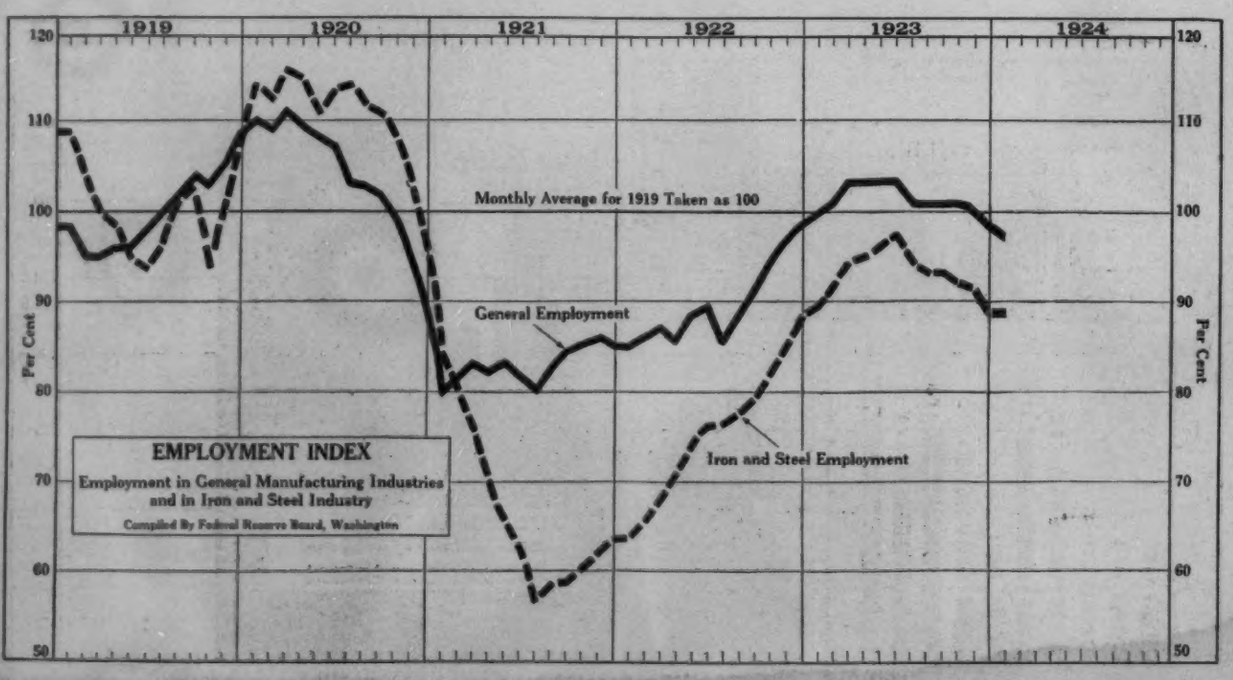


Index of Basic Output

THE production of basic industries, measured by the federal reserve board's index, swung forward with great impetus in January. The figure stood at 111 in December and in the following month it was at 120. This was an increase of 8 per cent. The computation makes allowance for seasonal variations. The advance in January 1923 over the preceding December was only 4 per cent. In a single month basic production recovered one-half of the recession registered during the decline from May to December.

Employment Index

ALTHOUGH production made a sharp gain in January, employment in the United States declined a fraction. The employment index, compiled by the federal reserve board, stood at 98 per cent of the 1918 average against 99 per cent in December and 99 per cent in January 1923. The index stands nearly 5 per cent under the peak of 1923 employment. Iron and steel works payrolls did not change in January. They stood at 89 per cent of the 1919 average as in December and in January 1923.



Briquets Borings and Turnings

Scottish Foundry Develops Special Press To Prepare Scrap Material for Charging in Cupola—Clay Water Binder Is Used—Castings for Hydraulic Cylinders Made Successfully from Melted Briquets

BY J. ALEX GARDNER

VARIOUS schemes for melting borings and turnings have been tried from time to time. These include packing in boxes made of metal or wood, bonding by rusting, or by Portland cement. The first of these plans entails the destruction of the container long before the mass of the borings or turnings is fritted together, with the consequent ejection of the particles, from the cupola by the air blast. The second is a slow process, even when accelerated by the use of ammonium chloride, and must by its nature involve excessive stocking and handling.

Briquetting machines are on the market, and are said to work well, operating at pressures from 100 to 150 tons, with an output of 1000 to 1500 bricks per hour, when working on such material as sand, coal and coke. In a typical example, Fig. 1, the pressure is applied by toggle levers driven by gearing, and the press requires 10 to 15 horsepower to drive it. On inquiry we found that the cost is over $6000 for a new machine, and more than $4000 for a reconditioned one.

Starting from this point we experimented on compressing the borings and turnings in taper tubes with a bond, finally getting a good briquette 3½ inches in diameter at the broad end and 3¼ inches at the narrow end, with an overall length of 6½ inches. The briquets thus formed can be handled easily, and are transported to drying ovens. After being dried, a briquet can be dropped from a height of about 20 feet upon hard material, and possibly may break into two pieces, sometimes more, but it does not disintegrate. This briquet was obtained by filling a taper tube 13½ inches long, the lower length of 6½ inches conforming to the dimensions of the finished briquet. This tube was firmly packed by hand with the borings and turnings mixed with a sufficiency of clay water, the clay water being the consistency of thick cream, and the quantity of it adjusted until little of it is squeezed out by ramming.

Ramming consisted of applying about 35 tons to the mass contained in the taper tube, by a ram 3 inches in diameter, the other end being effectively closed against squeezing out the borings, but not against the surplus clay water. The briquets thus formed in this case were dried on the floor round the carriages of the stoves used for drying loam and drysand molds, thus involving no additional outlay for this part of the process. We then proceeded to design a simple semiautomatic machine which could effect the manufacture of these briquettes. In the meantime, we made 1680 pounds of mixed turnings and borings into 213 briquets as shown in Fig, 2 and the resultant weight was such that the added clay weighed 93½ pounds, or 6.3 per cent of the whole, and the average weight of the briquets was therefore 8¼ pounds

These briquets were melted in a small cupola, with a 12-inch water pressure air blast, and cast into pigs, the yield showing a loss of 11.1 per cent. The borings contained dirt from the floors, etc.

An average sample of the borings before briquetting showed the following analysis:

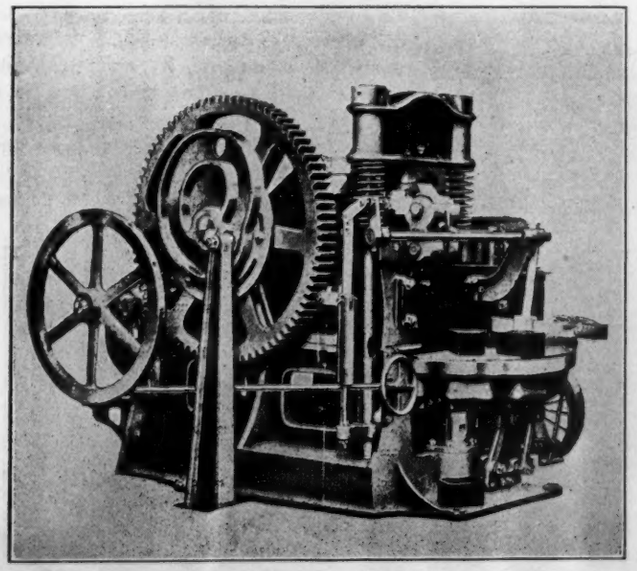
	Per cent
Silicon	2.187
Sulphur	0.062
Phosphorus	0.682
Manganese	0.528
Combined carbon	0.400
Graphitic carbon	2.880

After melting the pigs showed an analysis as follows:

	Per cent
Silicon	1.305
Sulphur	0.193
Phosphorus	0.716
Manganese	0.171
Combined carbon	2.115
Graphitic carbon	0.560

The resultant iron was white owing to what had evidently been a combination of the alumina in the clay used in briquetting with part of the silicon

Abstracted from a paper presented at a meeting of the Scottish branch of the Institute of British Foundrymen, held in Glasgow. The author is foundry engineer for Glenfield & Kennedy, Kilmarnock, Scotland.



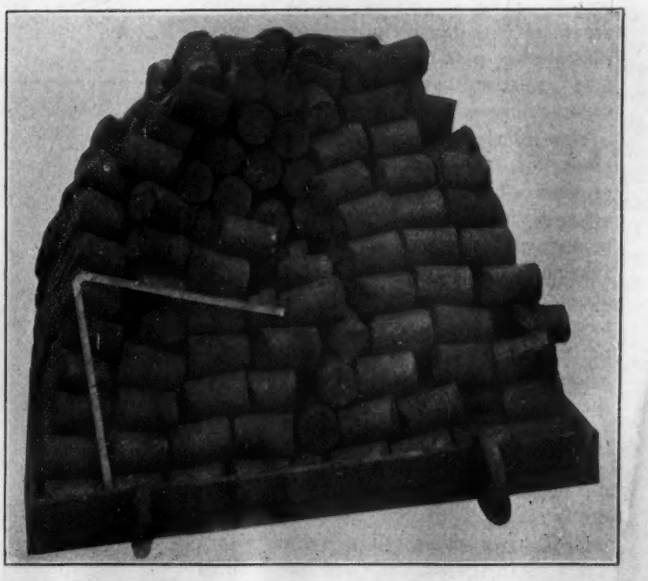


FIG. 1—COMMON TYPE OF BRIQUETTING MACHINE USING TOGGLE JOINT LEVER PRINCIPLE FOR COMPRESSING MATERIALS. FIG 2—BRIQUETS FORMED WITH CLAY BINDER

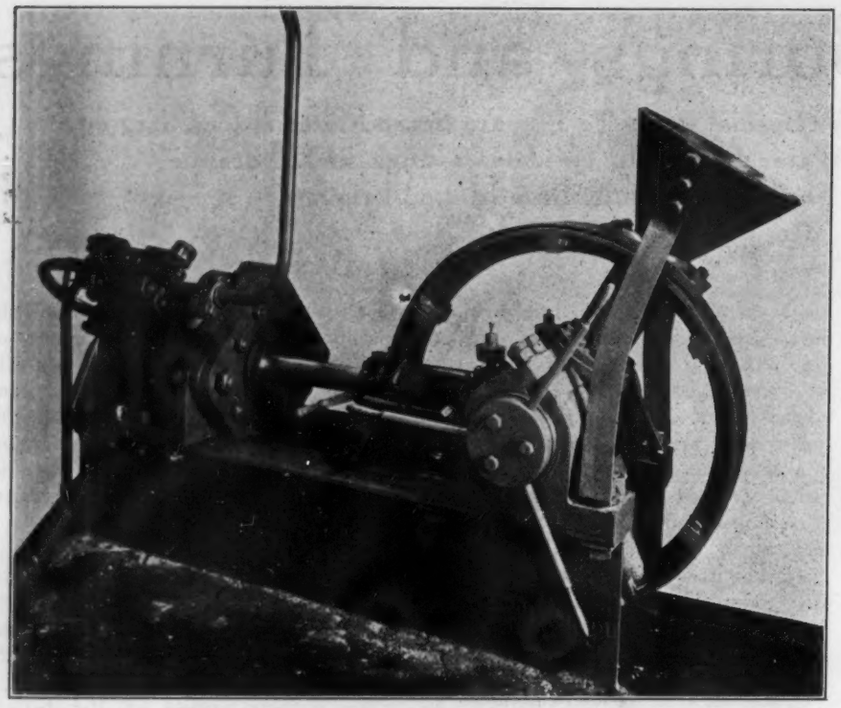


FIG. 3—MACHINE USED FOR FORMING BRIQUETS WITH CLAY BINDER

content of the turnings and borings, slagging off as one or more of the silicates of alumina.

Having thus obtained a reasonable return from the cupola insofar as quantity is concerned, and noting that a suitable addition of high silicon, or silvery iron as it is called, would rectify quality, we then concentrated upon building a machine which would turn out the briquets at a reasonable speed. A hopper gives direction to the borings and turnings which have already been mixed with clay water as shown in Fig. 3. We store our clay water in a tank which is kept agitated and mixed by a small jet of air rising from the bottom. The succeeding cylinders thus are filled with the clay and boring mixture as they pass under the hopper. The first cylinder having been filled, the three cylinders are rotated, the second is now filled and the first is brought in front of the compressing ram. A pressure of about 85,000 pounds is developed inside the hydraulic cylinder behind the ram which, allowing for frictional and other losses, will represent about 78,000 pounds effectively applied to the borings, or about 11,200 pounds per square inch of end surface of the briquet. The internal pressure on the cylinder is about 1120 pounds per square inch when pressure is on.

The cylinders are locked in position during the compression period. The hydraulic supply to the machine is controlled by a valve. The cylinders are again rotated when the third one is filled with borings, the second coming in front of ram, which when it functions, not

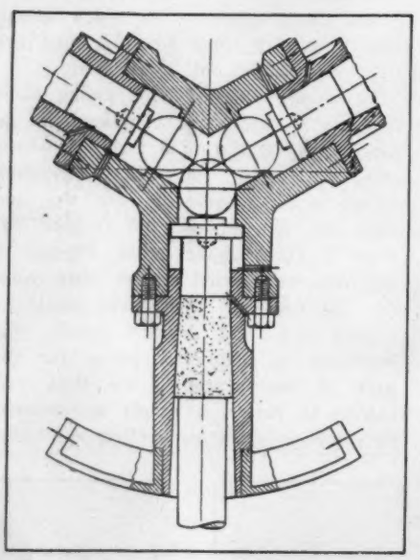


FIG. 4—OPERATING PRINCIPLE OF MACHINE SHOWN IN FIG. 3

only compresses the borings in this second cylinder, but at the same time by a system of three balls as shown in Fig 4. acting in a wedging manner on well fitting pistons at the bottom of the cylinder, ejects the contents of the first cylinder as a formed briquet upon a suitably curved plate which slides it to the floor.

The briquet we thus obtained was a homogeneous mass about 6 inches long, by about 3½ inches in diameter at the broad end, tapering to about 3 inches at the narrow end, and weighing when dry on the average 5¾ pounds.

A reasonable speed of production with three individuals when they have to mix the borings and clay water together and operate the machine is 940 briquets per working day, weighing about 6200 pounds but when the same individuals have to transport the briquets to the drying ovens, the production runs about 760 briquets per day, or a weight of 5000 pounds.

The greatest wear in the machine naturally is located in the tubes in which the briquets are compressed, the taper being gradually worn parallel. However, we can get about 21,582 briquets per tube before they are useless through not ejecting properly.

As the briquets are made, and immediately upon leaving the machine, their temperature rises about 60 degrees Fahr. above the atmospheric temperature, the briquet steaming slightly. Clay water is as yet the only medium with which we get this rise in temperature under the conditions stated after compression. With all other materials we have tried, the press grunts heavily during the application of the pressure, showing heavy frictional resistance to movement of the particles of the mass past one another, with the result that the briquet is not so homogeneous, neither can it be safely handled in transport before drying. I attribute the successful functioning of the clay water to the gelatinous nature of the hydrated oxide of aluminum, its chief content, whereby it, to a certain extent, acts as a lubricant.

The formed briquets are allowed to attain a primary set for about 2 to 3 hours, and then are placed on the floor

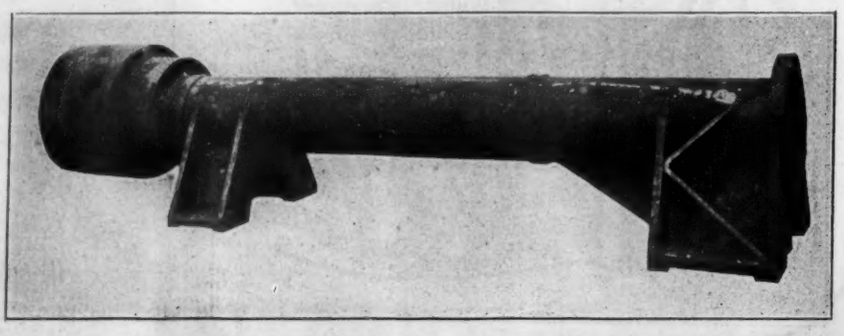


FIG. 5—A CYLINDER FOR A HYDRAULIC MACHINE WAS CAST FROM METAL MIXED WITH THE BRIQUETTED MATERIAL

round about the cores, loam and dry-sand molds in our drying ovens. After about 12 hours heating, the briquettes are quite dry, the alumina has been dehydrated, and the whole mass is found to be reasonably hard, and quite suitable to withstand the shock of falling down the barrel of the cupola when charging, that is, they may or may not break into two pieces, but they will not be disintegrated into useless powder.

We ran the machine until we had produced 827 of these briquets. Taking the clay content at 6.5 per cent, we divided into three charges and placed in the cupola, the following:

	Pounds
Briquets	4704
High silicon iron	2240
Good scrap	2240

At the same time we added a little more than the normal amount of coke and limestone.

The scrap was about as follows:

	Per cent
Silicon	2.400
Sulphur	0.040
Phosphorus	0.700
Manganese	0.800
Combined carbon	0.400
Graphitic carbon	2.920

The high silicon iron showed the following analysis:

	Per cent
Silicon	6.279
Sulphur	0.072
Phosphorus	0.375
Manganese	1.194
Combined carbon	0.074
Graphitic carbon	2.380

Taking the borings, we have:

	Per cent
Silicon	2.187
Sulphur	0.062
Phosphorus	0.682
Manganese	0.528
Combined carbon	0.400
Graphitic carbon	2.880

We ran the cupola under about 12 inches water pressure, and the metal came down hot and fluid, showing that our extra coke precaution was unnecessary, but, as may be anticipated, the melt was associated with a good quantity of slag.

An analysis made from a 40 x 2 x 1-inch test bar, cast about the middle of the run showed the following analysis:

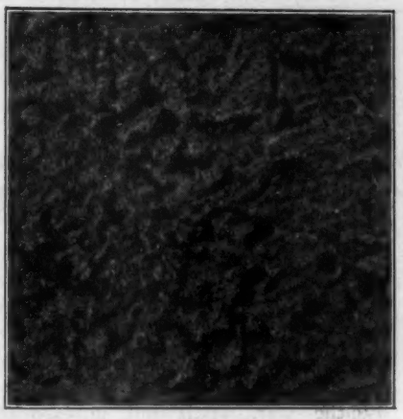


FIG. 7—PHOTOMICROGRAPH OF ONE OF THE TEST BARS

	Per cent
Silicon	2.365
Sulphur	0.153
Phosphorus	0.667
Manganese	0.457
Combined carbon	0.645
Graphitic carbon	2.040

Three test bars dimensioned as above, broken on 36-inch centers gave the following results:

No.	Pounds	Deflection	Remarks
1	4120	0.436	Slightly flawed
2	4000	0.427	Sound
3	4510	0.432	Sound
Ave.	4174	0.432	

We cast a hydraulic cylinder with this iron. Fig. 5 shows this casting cleaned and as shown it weighs with its head 5152 pounds. The usual slag and dirt were noted at the top when the casting was split, but below the mass of the iron is of fine quality, approaching the old cold blast iron in character, which is describable as of riven oak. Therefore, it is significant of a high degree of solidity and toughness. Fig. 6 shows the turned flange and bore of this cylinder.

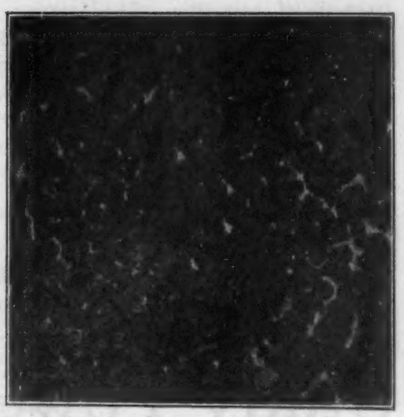


FIG. 8—SAME SECTION ETCHED WITH IODINE

The machinist reported that he was conscious of the iron being just slightly tougher than normal, but the cutting speed was not reduced.

A test of the chips taken while boring the cylinder showed silicon, 2.281 per cent and combined carbon, 0.075 per cent.

The lower figure of the combined carbon content is, of course, due to the much slower rate of cooling of the cylinder mass, in comparison with the test bar.

Fig. 7 shows a microsection cut from one of the test bars polished, but unetched. It reveals a finely divided graphite content, and comparatively little impurity. Fig. 8 shows the same section etched with iodine, and reveals the iron phosphide as white areas with the pearlite as halftone, and also the same small graphite plates. Both illustrations are under a magnification of 84 diameters, and fully substantiate the analysis and results obtained from the test bars.

In my opinion the superior qualities of this metal are due to the mechanical elimination of graphite by the machining process productive of the borings and turnings, and possibly also during the early melting stages, with a consequent diminution of the length and number of possible cleavage planes in the mass. In this way our product is similar to semisteel. A daily use of briquets when such are available in quantities varying from 5 to 25 per cent, has been proved to increase the

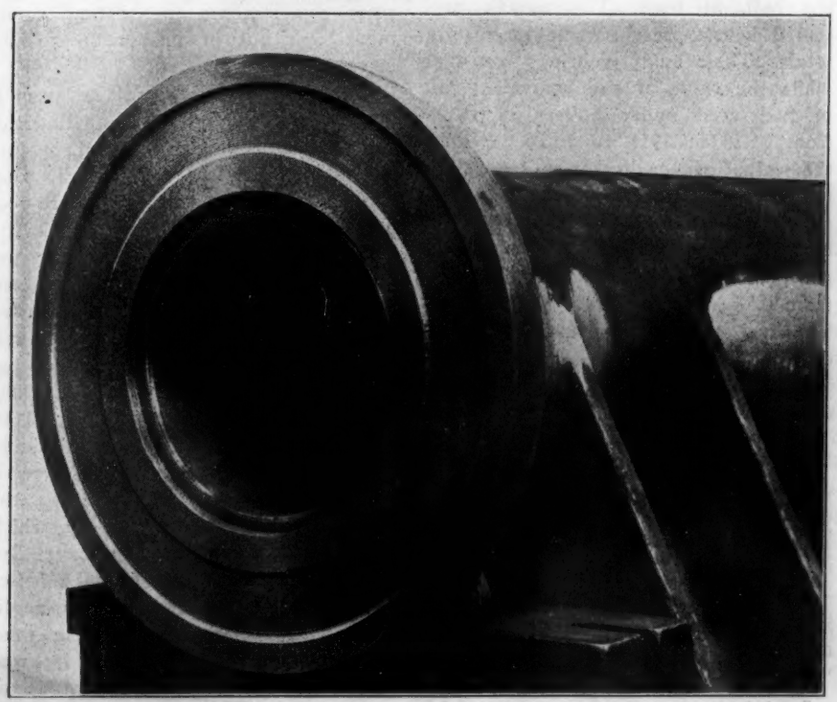


FIG. 6—MACHINED FLANGE AND BORE OF CYLINDER SHOWN IN FIG. 5

strength of cast iron. They appear to function in an almost exactly similar way to steel, although perhaps in the higher percentages, steel is in the ascendant owing to its dilution of the sulphur and phosphorus content. We have had transverse tests on a 2 x 1-inch bar on 36-inch centers of 5152 pounds in semisteel.

We confine ourselves to the fixed volume of air method of control in the cupola. So many variables affect the functioning of a cupola, that we feel it advisable to have one fairly constant factor. Therefore, we work as nearly as possible to 32,000 cubic feet of air per ton of iron. Then, if the iron is cold, we know that more coke is required of the quality we are using. If, on the other hand, the iron is hot, but the melting is slow, then too much coke is being used, and we can control accordingly.

For volume control we are using a pitometer tube in conjunction with an inclined manometer, one limb of which is larger in bore than the other. In this way, we get a relatively long sensitive column of water and a fine adjustment of the air is possible.

We find that a pitot tube is inexpensive, does not materially affect the flow of air, is easily fitted, takes up little room and it is accurate in its indicated measurement when installed as indicated.

Study Power Needs of Steel Industry

BETWEEN 6,000,000 and 8,000,000 tons of coal per year was burned under boilers of the iron and steel industry of the Pittsburgh district during the 10-year period, 1911-1920. This consumption amounted to between 400 and 500 cars per day, an amount greater than the consumption of bituminous coal of domestic origin in the United States for all purposes excepting railway fuel and bunker fuel for ocean vessels in each of all but 10 states of the Union, and greater than the coal production of 15 of the principal 25 bituminous producing states.

This information was obtained from a survey being made by Sumner B. Ely and W. F. Rittman, professors of commercial engineering, Carnegie Institute of Technology, Pittsburgh, to ascertain the present power requirements and potential future power possibilities in the Pittsburgh district, first, with relation to the community and its development as a whole, and second, with relation to the various specific industries of the community. Because the largest and most important industrial activity in the district is the production of iron and steel, that industry is being studied first. The Pittsburgh district is considered as the area described by a 30-mile radius with Pittsburgh as the center.

If the boiler power output of the Pittsburgh iron and steel industry for 1920 is expressed in equivalent kilowatt-hours, it will be found that this figure is about two-thirds of the total kilowatt-hours for the same period as given in the Boston-Washington superpower survey conducted recently. The area of the Boston-Washington survey includes Baltimore, Wilmington, Del., Philadelphia, Trenton, N. J., Jersey City, N. J., and New York, and many other large urban communities.

As the period covered by the Pittsburgh survey includes the World war with but a few overlapping years, some idea is given of the distortion produced by the war. It is not unreasonable to contend that what happened in this district happened in other localities. The survey has brought out distinctly the tendency to work equipment beyond the capacity at the beginning of the war, probably because additional equipment could not be obtained. Later increase in equipment is evident.

Power is proportional approximately to production, thus the data assembled indicates in general the demand for iron and steel. The general rise in the price of fuel has not been confined to the Pittsburgh district, so that the percentage of increase in the cost of fuel gives a fairly good idea of what happened throughout the country, or in the eastern half, at least. The figures presented below present some interesting totals. Their analysis brings out that while the value of one equivalent ton of fuel used under boilers increased from $1.10 in 1911 to $3.76 in 1920, the value of the fuel per equivalent ton of steel ingots produced increased from $0.65 in 1911 to $2.27 in 1920, because the gross tons of fuel used per gross ton of steel ingots increased from 0.57 in 1911 to but 0.60 in 1920. The fuel consumption and steel production by steelworks of the Pittsburgh district from 1911 to 1920 are as follows:

Year	Equivalent tons of fuel used ingots boilers	Value of fuel used ingots boilers	Equivalent tons of steel ingots produced
1911.....	5,920,000	$6,500,000	10,400,000
1912.....	6,850,000	9,200,000	11,800,000
1913.....	6,850,000	9,200,000	11,600,000
1914.....	5,470,000	7,400,000	8,900,000
1915.....	6,280,000	8,300,000	11,700,000
1916.....	7,400,000	10,900,000	14,100,000
1917.....	8,830,000	17,300,000	13,700,000
1918.....	8,250,000	21,700,000	13,000,000
1919.....	7,270,000	17,000,000	11,600,000
1920.....	7,830,000	29,500,000	13,000,000

Steel ingot tonnage produced in the Pittsburgh district during the decade ranged in round numbers from 9,000,000 to 14,000,000 tons, or equivalent to 600 to 900 railroad cars of steel ingots per day. The average of 12,000,000 tons of steel per year, if rolled into 100-pound rails, would make sufficient rail to girdle the world with single track 2.8 times. The increased average price of fuel of $2.66 per ton in 1920 over 1911 for the steel industry of the Pittsburgh district, amounted to almost $21,000,000, or somewhere near $10 per person living in that territory.

Boiler capacity of these industries from 1911 to 1918 averaged about 525,000 rated horsepower, but increased to about 625,000 rated horsepower in 1920. Steam produced in this boiler capacity shows a decided increase for the years after 1915, reflecting that increased producing capacity was obtained largely by the harder and more efficient use of the existing equipment since the increase in existing equipment was not in proportion to the increase in production.

Considerable blast furnace gas is burned under boilers. By equating this gas to coal on the basis of heating equivalents, it was found that the blast furnace gas used during the 10-year period was equivalent to from 2,225,000 to 3,500,000 tons of coal per year. The amount of natural gas consumed in the iron and steel industry prior to 1918 was of such small volume as to be negligible and the consumption afterward was small—18,000,000 cubic feet in 1919 and 16,000,000 cubic feet in 1920. Without doubt more could have been used were it not for regulations exercised by the distributors of natural gas by which domestic users were given priority. By-product tar also was used as a boiler fuel and, like natural gas, was negligible when compared with the total fuel consumption. It 1919 it was equivalent to less than 1000 tons of coal, in 1920 to less than 11,000 tons.

In the Pittsburgh district much gas

Abstracted from a review of the Pittsburgh survey prepared by Lester Bernstein, manager commercial development department, Philadelphia Co., Pittsburgh, and published in a recent issue of *Pittsburgh First*, the official organ of the chamber of commerce.

is generated by by-product coke ovens for use in open-hearth furnaces. At Clairton alone more than 13,000 tons of coal were coked daily and since the period of this study the capacity of this plant has been doubled. While some of the gas occasionally is diverted to boilers because of shutdowns of furnaces, and some is used as regulator gas to take care of slight shortages that may arise, the quantity is so small as to be negligible in the fuel totals for boilers.

The percentage of coal and blast furnace gas used for fuel purposes, based on the coal equivalent for blast furnace gas compared with coal, was fairly constant during the decade, in the ratio of 60 per cent coal to 40 per cent gas. This ratio is important because it shows that by efficient use blast furnace gases can be substituted for 40 per cent of the coal which otherwise would be required.

The survey conducted at Pittsburgh has brought out two marked developments in the power phase of the industry; first, the increased load carried by each unit of physical equipment; and second, the marked increase in the cost of fuel for the development of power. Many other interesting observations and comparisons can be made for the 10-year period.

Issues Progress Report on Gage Steel Tests

The eighth progress report of the gage steel investigation being conducted by the gage steel committee at the bureau of standards, Washington discusses in detail length changes during hardness and hardness tests on the deep hardening steels. The length changes of an oil hardening steel were followed through the hardening transformation. While the experiments did not give the actual length changes as they occur during normal hardening, they did give results which are in effect more useful. During quenching there are large temperature gradients from center to surface and the hardening transformation cannot occur simultaneously through the whole section of a large specimen. On air cooling, however, the temperature gradients are small and the unmasked behavior of the steel is obtained. The present experiments give the tendency of the dimensional changes of any element of volume in a similar specimen when the temperature is not uniform and hence permit an analysis of the dimensional changes during actual quenching.

In the hardness tests, the effect of rate of cooling, quenching temperature, tempering temperature; and rehardening on the hardness of two steels was studied. In general, it may be stated that a double quench will give as high a hardness as can be obtained by a single quench, but without the necessity of resorting to unduly high quenching temperatures or the most rapid quenching media. The double quench then gives more latitude for the control of the factors governing interval stress and hence time changes. The report contained three charts showing the results of the length and hardness tests.

Reviews of New Books

Guidepost to Mailing Lists

Mailing List Directory and Classified Index to Trade Directories, by Linda H. Morley and Adelaide C. Kight, under direction of John Cotton Dana; cloth; 727 pages; 5¾ x 8 inches; published by the McGraw-Hill Book Co., New York; furnished by IRON TRADE REVIEW for $10, net.

A remarkable compilation is presented in this volume, which is built on the experience of the business branch of the Newark public library in accumulating its collection in a period of 15 years of 800 trade directories. The index is compiled for users of trade directories, business houses, purchasing agents, and sales and advertising departments. It is for libraries that serve all these, whether they are in business offices or are public institutions serving the business men of cities. The index lists directories covering 1300 trades, with the names and address of the publishers. Twelve pages are devoted to explanation of the method of classifying the information in the directory and directions for its efficient use in seeking information. This volume is a valuable addition to the general information of business.

* * *

English Mediaeval Industry

English Industries of the Middle Ages, by L. F. Salzman, M. A., F. S. A.; cloth; 360 pages, 5 x 7½ inches; published by the Oxford University Press, American branch, New York; and furnished by IRON TRADE REVIEW at $3.50 net.

Much light often is thrown on present day nomenclature and methods by a study of the early history of an industry or craft. Beginnings are difficult to reach and often the task involves the search of much hay to obtain the single needle. Then conclusions must be drawn from the facts and references in writings contemporary to the times under investigation.

The author of "English Industries of the Middle Ages," has delved in ancient tomes and consulted original sources, beginning with the earliest and extending down to a variable period in the sixteenth century when the middle ages in industry began to give way to something more nearly resembling the modern. Written records are much more plentiful after the middle of that century and most treatises on industry have begun there. The writer of this volume has gone into developments preceding the sixteenth century and presents as clear a picture of industry's growth as can be developed. A wealth of footnotes directs the student to his authorities in case a deeper study is desired.

Illustrations add much and are taken from ancient manuscripts and books and from cathedral windows and carvings. They present to the eye what the mediaeval artist saw and sought to perpetuate in glass or stone. Mining of coal and metals, with some account of smelting and refining methods, quarrying, building, metal-working and foundry methods, pottery, textiles, fishing and brewing are presented. The final chapter deals with the control of industry and gives clues to some modern institutions that had their beginnings far in the past. An excellent index renders the entire work accessible to the reader seeking definite facts.

* * *

Cost Accountants Yearbook

National Association of Cost Accountants Year Book, 1923, Stuart Cameron McLeod, secretary; cloth; 377 pages 5½ x 8¾ inches; published by the association, 130 West Forty-second street, New York.

In addition to being the yearbook and directory of officers and members of the association this volume contains the proceedings of the fourth international cost conference at Buffalo in September 1923. The table of contents presents the various papers presented at the conference under topic headings in a way to make them available to the reader who seeks a certain subject. A list of chapters of the association and their officers is appended. Inasmuch as the subject of associations gathering statistics as to costs has been before the government at Washington recently the discussions at this conference are of much interest.

Fabricating Hydroelectric Units

Increasing Size of Water Power Machinery Calls for Unusual Skill in Production of Heavy Castings and Steel Plate Sections—New 70,000-Horsepower Turbo-generator Now Under Construction Introduces New Problems

BY HERBERT R. SIMONDS

The author is associate editor at Boston of IRON TRADE REVIEW.

WHEN great rivers are harnessed requiring massive dams, large steel penstocks to carry water to powerhouses, and large turbogenerators to utilize this water—the public is thrilled by the engineering and construction features of these achievements. Comparatively few persons realize that behind projects of this kind are the great machine shops and fabricating plants of the country. Only through the ability of these shops and plants to build heavy and efficient hydraulic machinery has recent water power development been commercially feasible.

The tendency in design of hydroelectric machinery has been constantly toward larger units. In 1912, the Washington Water Power Co. installed three units of 22,000 horsepower each at its Long Lake plant near Spokane, Wash. At that time these were the largest single units ever built. Since then, however, almost every year has seen an advance in the size of waterwheel units, until in 1922 the Niagara Falls Power Co. placed the order for three 70,000-horsepower hydraulic turbines. One of these is now being built complete at the plant of the Allis-Chalmers Mfg. Co., West Allis, Milwaukee. This plant long has specialized in hydraulic machinery and the fact that it is now building one of the largest turbines in the world again calls attention to its unique manufacturing facilities.

Construction of turbines and water power plant machinery requires a fairly heavy consumption of iron and steel. It is not in the actual tonnage of metals used, however, that the chief interest lies, but rather in the novel methods of manufacture associated with the forming and finishing of the large pieces which enter into the modern water power development. The construction of large turbines calls for the exercise of skill in many lines. As an example, intricate iron and steel castings are required for turbine runners; heavy plate forming and bending is required in making up casings; and in order to turn the speed rings, valves and other parts, special machine equipment must be designed.

Some idea of the problems involved in machining turbine parts may be seen from Fig. 2 showing a ring 26 feet in diameter which has been turned on a special boring mill. Large gears often are required in utilizing power developed by water and this means special gear cutting equipment. Fig. 3 shows a gear 16 feet in diameter with an 18-inch face for which special machinery was required.

The Allis-Chalmers Mfg. Co. plant is unusual in several respects. In the first place, it is located far enough from Milwaukee to create a suburb of its own and thus to build up among its employes a community spirit and a social life which can not be secured in a large city. Before the plant was built, there was practically nothing at West Allis and it took considerable courage and faith in a vision for the original organizers to put millions of dollars into a plant planned primarily for custom trade.

The arrangement of buildings at the West Allis works is excellently adapted to a steady flow in the manufacturing

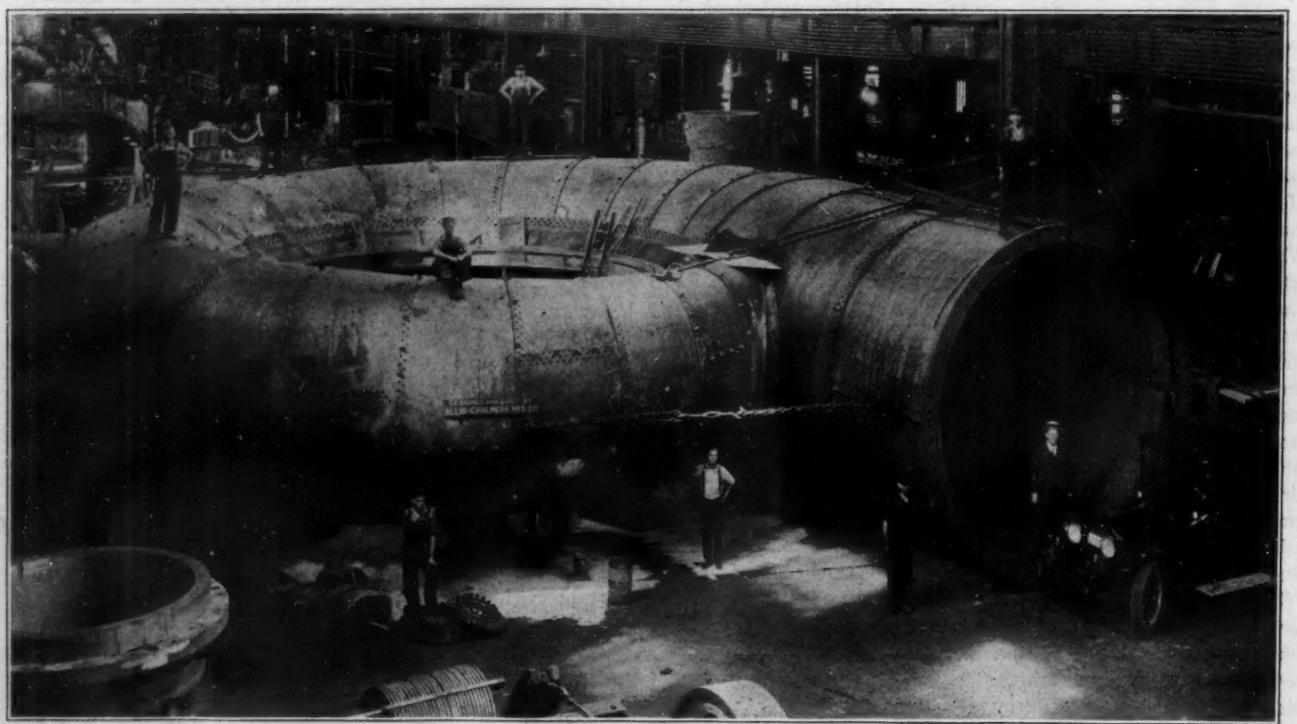


FIG. 1—PROBABLY THIS IS THE LARGEST HYDRAULIC TURBINE CASING EVER BUILT. THE INLET HAS A DIAMETER OF 15 FEET AND THE OVERALL DIAMETER IS 50 FEET. AN AUTOMOBILE COULD DRIVE ALMOST COMPLETELY THROUGH THE SPIRAL CASING

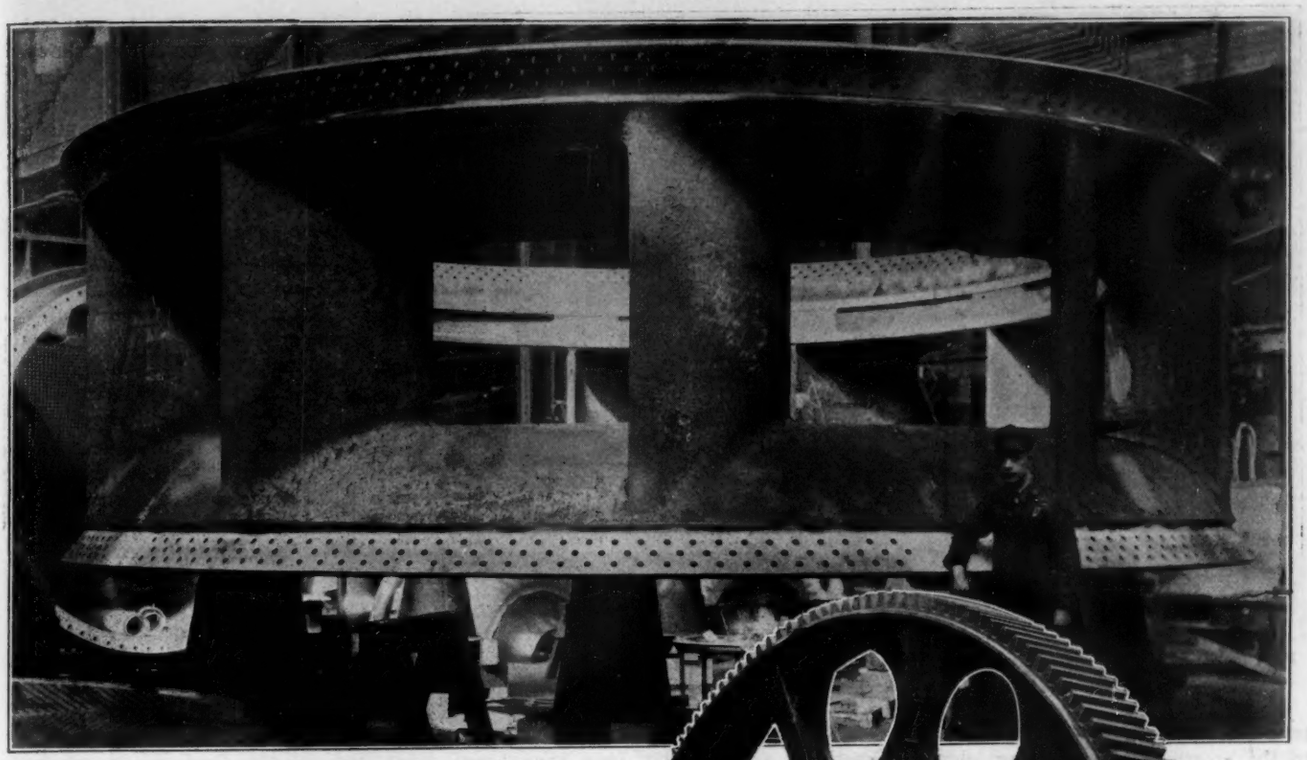


Fig. 2 (Above)—The cast steel ring for the Niagara Falls Power Co. hydroelectric generator was cast in five parts and weighed 72 tons. A special boring mill was required to finish it. Fig. 3 (Right)—Special equipment also was required to produce this 16-foot gear. It has an 18-inch face. Fig. 4 (Below)—A general view of the Allis-Chalmers erecting shop.

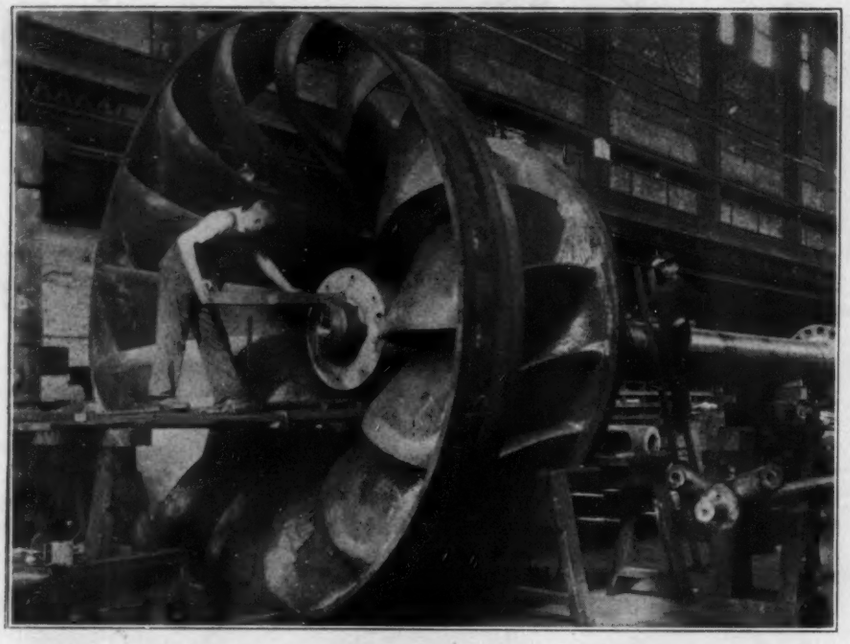


FIG. 5—A 53-TON CAST IRON RUNNER CASTING WHICH REQUIRED SEVERAL WEEKS TO MOLD. FIFTEEN CORES WERE USED TO FORM THE VANES

process from the raw material through to the erecting and shipping departments. The general layout is shown in Fig. 7. On entering the plant, the first building contains the main office, 5 stories high and 1200 feet long, one end of which is devoted to the storage of large patterns. The pattern shop, a 1-story building of equal length, adjoins the office building. Such a combination is the logical start for any general machine shop. The orders come in to the main office, go from here to the departmental drafting rooms, and then to the pattern shop.

Parallel to the first group of buildings is the main foundry. This is a building approximately 1000 feet long and 220 feet wide with dozens of cranes of varying sizes. It is served by cupolas having a daily capacity of 350 tons. Single castings weighing 120 tons have been molded successfully in this building. The work is distributed from left to right throughout the building according to the relative weight of the casting and this same general scheme follows through the adjacent machine shops.

Castings ready to leave the foundry are carried in to the appropriate machine shop depending upon the nature of the machine work to be performed. There are six machine shops at present, arranged in a row at right angles to the first two buildings. These shops are each 577 feet long and are spaced about 70 feet apart and all join on to the erecting shop at their far ends. The erecting shop, which is 1157 feet long, is designed for the erection of almost any type of machinery. Fig. 4, a general view of the erecting shop, clearly shows the diversity of product which the plant turns out. At the left in the foreground is a large gas engine and at the right is the butterfly valve which has been made for use in connection with the 70,000-horsepower hydraulic turbine previously mentioned.

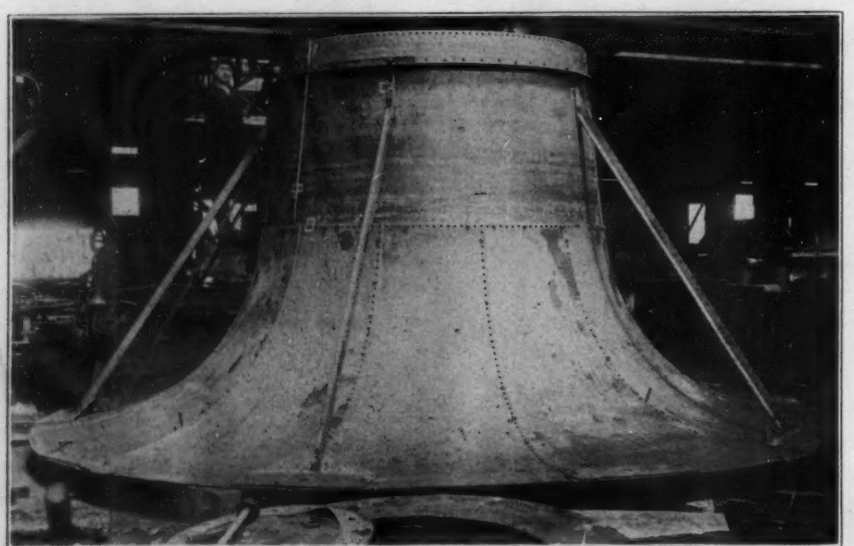


FIG. 6—THE HYDRAUCONE WHICH HAS MUCH TO DO WITH TURBINE EFFICIENCY. THE PLATES ARE FORMED HOT AGAINST TEMPLETS

Utmost care in planning and routing work must be observed in order that production will come up to schedules. On a large turbine job some pieces require much more time to make than others so that it is necessary either to start production at different times or to hold some finished parts on the erection floor waiting for other parts which require a longer time to come through the shops.

For heavy special work such as making the 70,000-horsepower turbine for the Niagara Falls Power Co. orders are issued as soon as possible for all parts which go to make up the complete unit, and, as these different parts are finished, they are gathered together in one part of the erection room. The assembling is started at once and progresses as rapidly as the arrival of parts permits. The principal parts of a large hydraulic turbine are the casing, the runner, the speed ring, and the hydraucone. Large turbines usually are mounted on a vertical shaft with the runner at the lower end and the generator at the upper end.

Many Cores Used in Mold

The large turbine runner which is cast is one solid piece presents one of the most difficult of foundry problems. Fig. 5 shows a cast iron runner made for the Alabama Power Co. and is similar in design to the runner being built for the Niagara Falls Power Co. The runner shown weighs 53 tons and several weeks were necessary to prepare its mold. The vanes are formed in the mold by means of cores, 15 of these large cores exactly similar in form being placed carefully inside of the ring pattern which forms the lower part of the runner. The hub and upper disk are formed with other cores.

After the runner casting has been taken out of the sand, it is placed on a large vertical lathe where the hub is bored and the outer circumference is turned. The blades are finished entirely by chipping and grinding. It is necesary to have smooth surfaces wherever there is a flow of water and these are secured by means of portable grinders. One method of producing accurately ground surfaces of this types is to use a swing frame grinder, the motion of which is controlled by a templet corresponding to the desired curve. The shafts used to support these runners are steel forgings turned on special lathes.

Because of the weight of the plate

used in its construction, the casing calls for considerable ingenuity on the part of those in charge of the fabrication. The casing shown in Fig. 1 is made of plates varying from ⅞ to 1¼ inches in thickness. The spiral tube is 15 feet in diameter at the inlet which means that it would be possible to drive an automobile into this opening and around the spiral almost up to the smallest section. Each plate entering into the construction of this casing separately designed and formed to a definite curve. The plates are cut on heavy power shears and punched for rivets on heavy duty punches.

If any plate is found to be not quite true as to curve as the assembly progresses it is heated to a white heat with oxyacetylene torches and hammered into place. The entire casing is carefully fitted and bolted together in the shop after which it is taken down and shipped to the site of the power house where it is again assembled and riveted together. As may be imagined the riveting is a difficult operation. For the Niagara Falls casing a special hydraulic riveter was built by the Hanna Engineering Works, Chicago. This riveter which is suspended from a traveling crane consists of heavy horseshoe-shaped jaws sufficiently deep to take one width of the casing plate at the widest point. The work of riveting will be started after the smallest section has been fitted in place after which each successive joint will be riveted before the next section is put in place.

Careful Machining Is Required

The speed ring for the Niagara turbine is made of cast steel and, because of the difficulty of making such a large steel casting, this ring was cast in five sections. These sections were then machined at the ends and bolted together. It is a tribute to those responsible for the machining that the parts came together with an exact fit at the joints. The division of a circle into five parts is rather unusual. The total weight of the speed ring is 72 tons and its outside diameter is 26 feet.

The hydraucone is shown in Fig. 6. This is made of lighter steel than the casing and, therefore, is not such a difficult fabricating job. It is important, however, that the conical surface be true to design as this has an important bearing on the hydraulic efficiency of the unit. The individual plates are formed hot against a templet, and here as in the case of the runner blades the surfaces are smoothed down with portable grinders.

As the design of turbines grows larger plant equipment has to be altered to take care of the construction of the different parts. In the case of the 70,000-horsepower Niagara Falls turbine it was necessary to cut in two the largest boring mill in the Allis-Chalmers plant and add a section in order to turn the circumference of the large steel speed ring. In a similar way other equipment throughout the plant is constantly being adapted to new types of work. In spite of these obstacles, however, hydraulic engineers are told to go as far as they like in designing larger and larger units. The construction engineers are prepared to keep pace with them.

Recommends Reduction in Bolt and Nut Sizes

Recommendations calling for the elimination of more than 40 per cent of types of plow bolts were adopted at a meeting at Washington recently of representatives of manufacturers of nuts and bolts and of agricultural implements, the American Engineering Standards sectional committee, embracing 26 other industrial groups, and the United States chamber of commerce with the simplified practice division of the department of commerce. William A. Durgin, of the division of simplified practice, presided. An agreement was reached as to what should constitute standard sizes of carriage bolts and nuts used in the agricultural implement trade.

The conference also voted to recommend to all manufacturers, distributors and consumers that the new program should become effective on new production on Jan. 1, 1925, and on existing stocks on Jan. 1, 1926. Secretary of Commerce Hoover addressed the conference and said that simplification represents one of the foremost steps in the reduction of manufacturing costs. Through simplification, trade associations are enabled to make contributions on a sound basis to American industry and commerce, Mr. Hoover said.

A. E. Norton, chairman of the engineering standards sectional committee, outlining the value of the conference from a technical standpoint, stated that the steps taken at this conference would affect certain exports. He estimated that the standardization steps eventually would bring about the elimination of more than 50 cent of the present number of open-end wrench sizes. The subcommittee of the conference, to which was referred the problem of technical standards for carriage bolts and nuts, was headed by Mr. Norton, W. J. Outcalt, of the General Motors Corp., Detroit, and H. W. Bearce, secretary of the National Screw Thread commission.

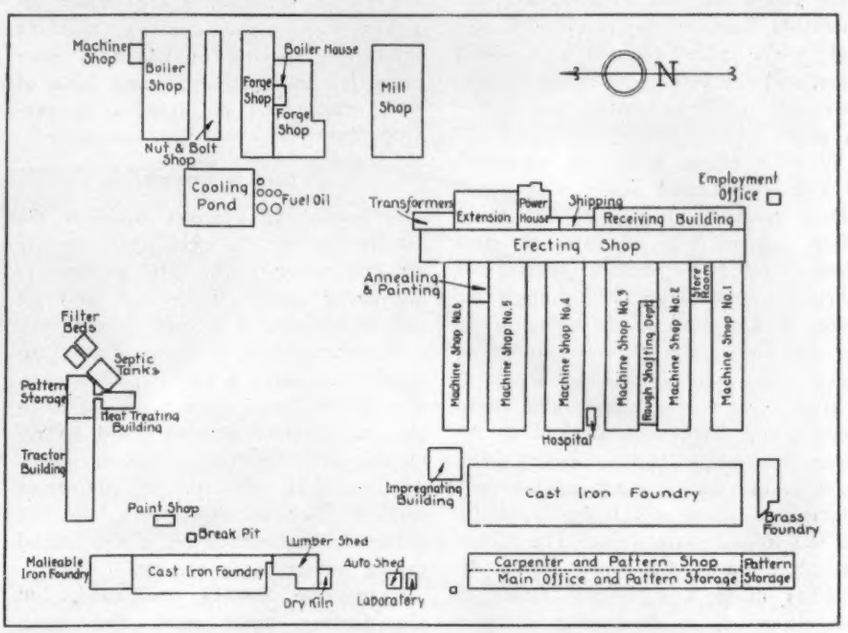


FIG. 7—THE WEST ALLIS WORKS OF THE ALLIS-CHALMERS MFG. CO. IS ARRANGED FOR A MINIMUM OF MATERIAL HANDLING

Testing Southern Ores

Investigation of gray ores which abound in large quantities in various sections of Alabama, with a view to establishing this availability for iron making, was started in the latter part of February at the southern experiment station of the United States bureau of mines at Tuscaloosa, Ala., with Dr. W. R. Crane in charge. Experts of the bureau believe the ore will be satisfactory for blast furnace use. When properly prepared and cleaned. The furnace interests of the state are co-operating with the bureau.

Charles Hatch, Stamford, Conn., has been named as temporary receiver for Schickel Motor Co., that city. Company now manufactures motorcycles.

Build Barges of Steel Channels

Engineers Have Developed New Method of Construction Employing Ordinary Channels Bolted Together—Gaskets Are Applied Between Flanges To Make Hull Water-Tight—Great Strength Is Claimed

SINCE the world's first known shipbuilder, Noah, built his ship of wood, only two principal methods of hull construction, that of wood and the modern construction of riveted steel, have been used. The older or wood construction is still extensively used for river, harbor and canal duty, and many boats are built annually for such work. They are good boats, but not as good as their ancestors because the wonderful oak and white pine timbers are about gone, and the yellow pine and fir timbers are of inferior quality, and higher in price.

Wooden ships, with the exception of those mentioned above, have been almost entirely displaced by those whose outer skin consists of steel plates riveted to frames of various fabricated steel shapes. Although the price is higher, an increasing number of riveted steel vessels find their place each year on inland waters.

Steel vessels of a simple and cheap construction have been desired to replace those now built of wood, and to meet the demands for steel vessels which the future will bring especially on the inland waterways. The Channel Steel Barge Co., Inc., Rome, N. Y., has made a significant stride in this direction, in developing its patented system of channel steel construction for such fabrication work.

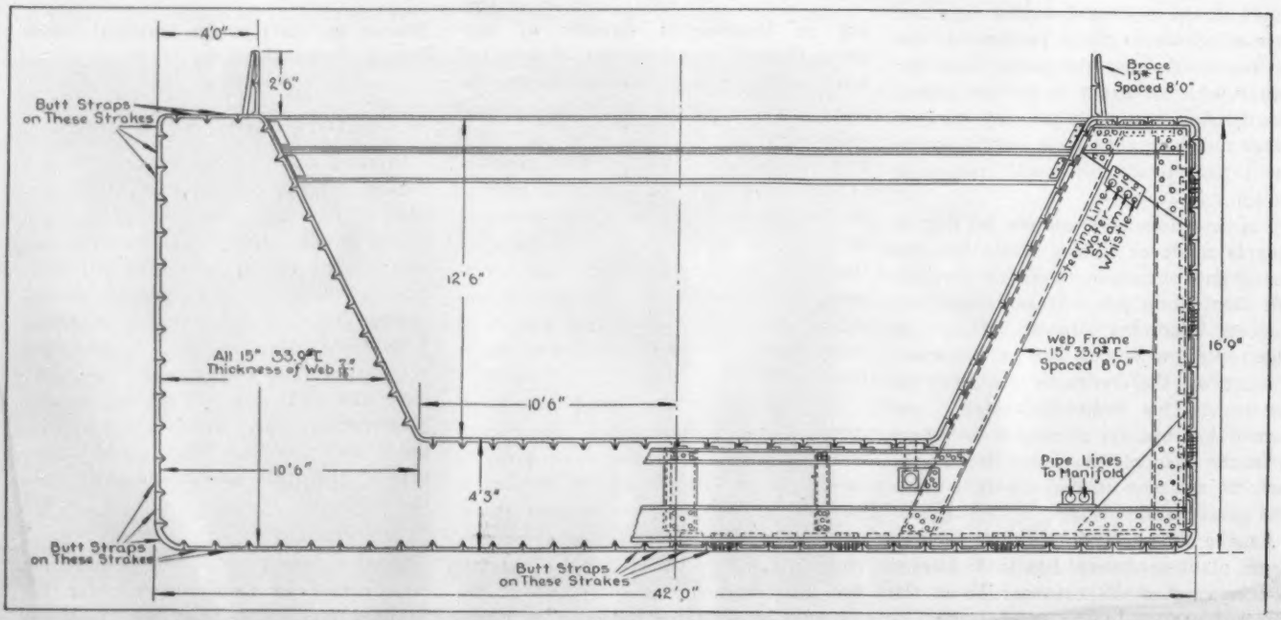
The principal feature of the channel steel system is that the outer skin of the vessel is made entirely of standard steel channels which run lengthwise of the hull with the flanges turned upward. A steel channel is a much stronger member than a flat steel plate and it also has about twice the strength of the same weight of yellow pine. The flanges are bolted together with standard iron machine bolts, the spacing of which is governed by the size, type and kind of work the vessel is intended to perform.

Hull Is Strong

A special felt gasket between the flanges makes the seam permanently air and water tight. The gasket being under great compression, and air and watertight, is subject to but very little deterioration, it being almost impossible to drive a nail into the seam. Should the vessel sustain serious damage, the channel strakes could be removed with but little trouble, and a new gasket put in, or the seam caulked. For oil tight work, the felt gasket is surrounded by a thin metal casing before it is set up.

Transverse frames are used, but are farther apart with the spacing averaging between 8 and 16 feet. No other framing is required, as the flanges of the channels possess great stiffness and form longitudinal girders which run the entire length of the vessel. The enormous strength of a hull built under this system is, therefore, obvious.

The first channel steel vessel was constructed in 1922 and was a hopper bottom sand barge, 116 feet overall length, 22 feet beam, and 10 feet 6 inches molded depth. Her draft complete was 16 inches. The hull, however, was not built entirely of steel, a 6-inch piece of yellow pine planking being between each steel channel with the fastening bolts running entirely through the planking and the flanges of the channels. The special felt gasket was interposed between the channel flanges and the wood member. To test the strength of the barge before launching, all intermediate blockings were removed, as illustrated, and the hull rested on the two end blocks, 95 feet between supports. It stood for 24 hours in this manner without any sign of sagging or buckling. It was then balanced on the midship block and all other blocks removed. It showed no sign of straining or injury after this test. This probably is as severe a test as has ever been deliberately given to a vessel's hull, designed for nothing



CROSS-SECTION OF 200-FOOT, SELF-PROPELLED HOPPER DREDGE BUILT OF CHANNELS, FOR GREAT LAKES SERVICE

more than purely commercial uses.

As all-steel vessels were preferable, the second one built under this system was entirely of steel, with the exception of a wood fender strake interposed between two strakes of steel channels. The hopper combing and gunwale strake were also wood. This barge is a 125-yard pocket dump scow, with a trunnel running the entire length of the barge underneath the pocket doors. She was built for the state of New York. She is 100 feet in length, 22 feet beam and 5 feet 6 inches molded depth. The channels used in this construction were 15 inch, 33.9 pounds and those in the hopper sand barge were 12 inch, 20.7 pounds. The frames are spaced about every nine feet and are made up of the same size channels. Bulkheads as usual are located at the ends of each vessel, and at the divisions in the hoppers and tanks, and are also made of steel channels in the same manner as the outer skin.

Both vessels are giving excellent service and more of a larger type will be constructed under this system in the near future.

Designs for two self-propelled hopper dredges or sandsuckers for Great Lakes work have been completed, in which the channel steel system is used throughout, in the hull construction. The vessels are to be built to the American bureau of shipping requirements with a class of 100 C. F. for such work. Each vessel is of the regular lake type with machinery aft, 200 feet overall length, 42 feet beam and 16 feet 9 inches molded depth. The two hoppers in each vessel are open their entire length and width. The deadweight capacity of each vessel is about 2000 gross tons on a 14-foot draft. Approximately 475 net tons of steel is used in each hull. The channels used are 15 inch, 33.9 pounds. Web frames, which are the only frames, are spaced 8 feet, but doubled under machinery spaces and bow. These frames are made up of 15 inch, 33.9-pound channels. These vessels will probably have a speed of 8 to 9 knots, but the type of power installation has not as yet been determined.

Another feature in these vessels, is that but a single row of rivets penetrates the outer skin at only the web frames and bulkheads, and six rivets which secure an inside butt plate, on a few deck and bilge strakes. No rivets penetrate the sides or bottoms of the hoppers, except at the bulkheads and arches. Welding is done away with as much as possible, and is only used to weld seams at the butts of channels, which come well staggered, as 65-foot channels are used, or to weld in and around tapered strakes.

(TOP) 125-YARD POCKET DUMP SCOW BUILT FOR NEW YORK STATE, ON THE BLOCKS JUST BEFORE COMPLETION. (CENTER) FIRST BARGE BUILT UNDER CHANNEL STEEL SYSTEM SUSPENDED ON END BLOCKS, 95 FEET BETWEEN SUPPORTS. (BOTTOM) INSIDE OF HULL, SHOWING CHANNEL FLANGES, BOLTING AND METHOD OF SECURING CORNER CHANNEL IN DUMP SCOW. METHOD OF INSERTING WOOD FENDER STRAKE BETWEEN CHANNELS IS SHOWN

The paramount object of the channel steel construction is to use material of uniform size, weight and shape so far as it is possible, but only where practical. The construction is simplified as much as possible, in order that a low construction cost may be obtained, and a strong and efficient vessel turned out. Designs for larger vessels will probably be introduced in the near future.

The Channel Steel Barge Co., Inc., is equipped to build larger vessels under this system, but owing to the size of the New York state barge canal locks, the low overhead clearances and the draft of water, the size of vessels is restricted. The maximum size would be about 300 feet overall length, 44 feet extreme breadth, and 24 feet molded depth.

Sells German Rights for Making Die Castings

The German rights for the manufacture of die castings under the patents held by the Doehler Die Casting Co., Brooklyn, have been purchased by a syndicate composed of Hugo Stinnes and Hirch, Kupfer & Messingwerke. Construction of a building for the utilization of the process already has been begun in Hamburg, and it is expected that the business will be operated as the Doehler Giess machine , G. M. B. H. The final details of the transaction were arranged during the recent visit to this country of Mr. Stinnes' son. Mr. Stinnes is given the right to sublet the Doehler process in other European or South American countries.

Study Stock Flow in Furnaces

Effect of Coke Combustibility on Descent of Charge Shown by Simple Experiments with Models—Material Moves More Rapidly at Circumference, with Fast-Burning Fuel—Three Types of Combustion Discussed

BY P. H. ROYSTER AND T. L. JOSEPH

IN A STUDY of the blast furnace process the bureau of mines has made many experiments for the purpose of determining the exact nature of the combustion of coke in the neighborhood of the tuyeres. Two papers presented at a meeting of the American Institute of Mining and Metallurgical Engineers discussed somewhat the practical aspects of coke combustibility in its relation to the operation of the blast furnace. In a later paper Sherman and Kinney discussed the possible effect of variations in the combustibility of cokes on the furnace operation, and find that the "reoxidation theory" of Koppers and the "heat concentration theory" of Brassert are insufficient to explain the variation in the conduct of different cokes that has been observed by furnace operators.

Coke Quality Not Important

In their report to the D-5 committee of the American Society for Testing Materials, with which the bureau of mines has been co-operating, Perrott and Fieldner seem to agree with Sherman and Kinney that for practical purposes the nature of the combustion of coke at the tuyeres of any furnace is constant and is affected neither by the physical properties of the coke nor by the nature of the furnace operation. They omit as unimportant any tests on the combustibility of coke from their proposed methods for standard tests on coke. In the last two papers, it is pointed out that performance tests, in which all other factors except coke quality are kept constant, are to be desired and it is suggested that such a research can be conducted with the bureau's experimental blast furnace at Minneapolis.

It is difficult to determine to what extent furnace operators and coke producers are convinced that the data collected by Perrott and Kinney prove that coke combustibility is not an important factor in blast furnace operation. At first, it would seem, from the gas analyses taken across the tuyere zone of 11 furnaces, that the variations in the locations of the points

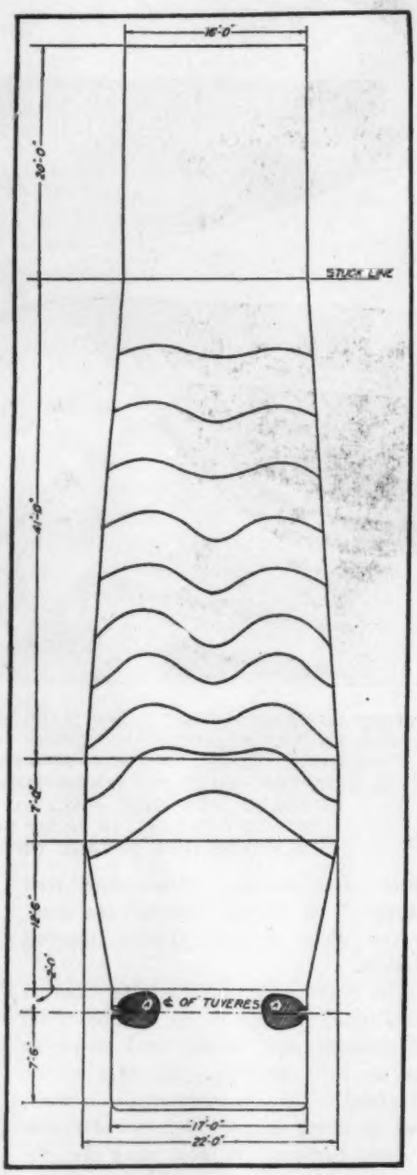


FIG. 1—CROSS-SECTION OF REPRESENTATIVE AMERICAN BLAST FURNACE. THE ISOCHRONOUS LINES ARE SHOWN WITH NORMAL COMBUSTIBILITY

of disappearance of oxygen and carbon dioxide are too small to produce any noticeable change in the operation of the furnace; these results cannot be readily reconciled with the differences observed by operators in the performance of coke in the blast furnace. It seems safe to conclude, however, that Perrott and Kinney have verified the discovery of Ebelman, in 1841, that all of the coke burned by the blast is consumed within 30 to 40 inches from the tuyeres.

In their original report, Perrott and Kinney collect into one table the work of previous similar investigations. Of these early investigators, Van Vloten, in 1893, conducted the most systematic investigation of coke combustion, although his data were taken from only one furnace. Van Vloten's gas samples were not confined, however, to points along the center line of the tuyeres; he covered the whole of the tuyere plane, also a plane above and another plane below the level of the tuyeres. The region of combustion was found to approximate spheres with centers corresponding to the center of the tuyeres.

Further Investigations Under Way

Although this conclusion would readily follow from the work of Perrott and Kinney, it might be suggested, because the coke in the face of the tuyeres breaks up the jet action, that the percentages of O_2 and CO_2 might be found to vary differently depending on the angle of approach to the tuyere. A number of furnace operators have expressed the opinion that the combustion zone extends farther above the tuyere plane than it does toward the center of the furnace along the axis of the tuyere. Work is now under way, in the Birmingham district, to obtain further information on this point by exploring a plane above the tuyere level.

It is the purpose of the present paper to discuss the suggestion of Van Vloten that as all the coke disappears in isolated regions located at the nose of the several tuyeres, it is necessary to assume that the descent of the coke in the bosh is not in vertical lines but that the flow is analogous to the motion of a liquid through a funnel, it being supposed that a funnel is mounted over each tuyere. This would leave a large part of the hearth and bosh filled with practically stationary coke; it is probable that stationary coke exists not only

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Abstract of paper presented at New York meeting, American Institute of Mining and Metallurgical Engineers, Feb. 18-21. P. H. Royster is assistant metallurgist, and T. L. Joseph, associate metallurgist, United States bureau of mines, Minneapolis, Minn.

in the center of the hearth, but also between the tuyeres. The effect of such a mass of coke lying at rest in the bottom of the hearth on the motion of the stock in the furnace, as a whole, is impossible to predict, and Van Vloten suggested that its effect should be studied.

Acting on this suggestion of Van Vloten, the writers tried to study, in a simple way, the effect of coke combustibility on the movement of the charge in a blast furnace by means of small model furnaces. The use of such models was suggested by Bell and a most excellent series of such experiments was published in 1888. It is unfortunate that the data of Van Vloten were published five years after the experiments of Richards and Lodge, instead of five years before.

The model experiments of Richards and Lodge were carried out with a vertical model of wood and glass 40 inches high, the furnace lines of the model being those of Edgar Thompson furnace D, of 1885. The model was filled by the bell-and-hopper device, the charge being various mixtures of sand and pebbles. These investigators discussed, in their paper, the obvious criticisms applicable to such a model and termed their experiments crude and defective but hoped that "they would throw some light on the difficult question of furnace feeding," which result they accomplished.

The most serious fault with the manner of conducting the experiments was the method of removing the sand and pebbles from the bottom of the model. In most cases, the materials were removed uniformly across the hearth level; but in several cases from near the center of the hearth. It appears that little importance was attached to this phase of the experiments, the natural assumption seeming to be that combustion extended throughout the plane of the tuyeres. From the location of the zones of combustion, as determined by actual experiment, the materials representing the blast furnace charge should have been removed from isolated regions near the edge of the hearth.

Device Used for Tests

The writers have carried on experiments with model furnaces for several years. The purpose of these experiments was in no way connected with the question of furnace filling. In one phase of the writer's work, the problem of furnace lines has been predominant. Experience with these models has convinced them that such experiments are of great value in helping the mind to visualize the course of the solid charge in its path downward through the furnace.

After trying a number of possibilities, the following device has been adopted. A smooth wooden board is inclined at an angle of about 10 to 20 degrees. On this board the lines of the furnace to be examined are drawn to scale and pieces of cardboard are glued to the board to correspond to the furnace walls; the space within, corresponding to the furnace proper, is filled one layer thick with small lead shot, 0.16-inch diameter, which would correspond in the actual furnace to 5-inch spheres. A definite number of shot is removed from the tuyere zone at those places where the lumps of coke are supposed to be burned by the blast, and the overlying mass slides down under the influence of gravity, new shot being charged to keep the stock line constant. A suitable number of the shot are etched with acid, plated with copper, or otherwise marked in order that they may be distinguished one from another. The path taken by the shot through the model furnace and the relative speeds with which the various shot travel are measured by noting the position of the marked shot from time to time.

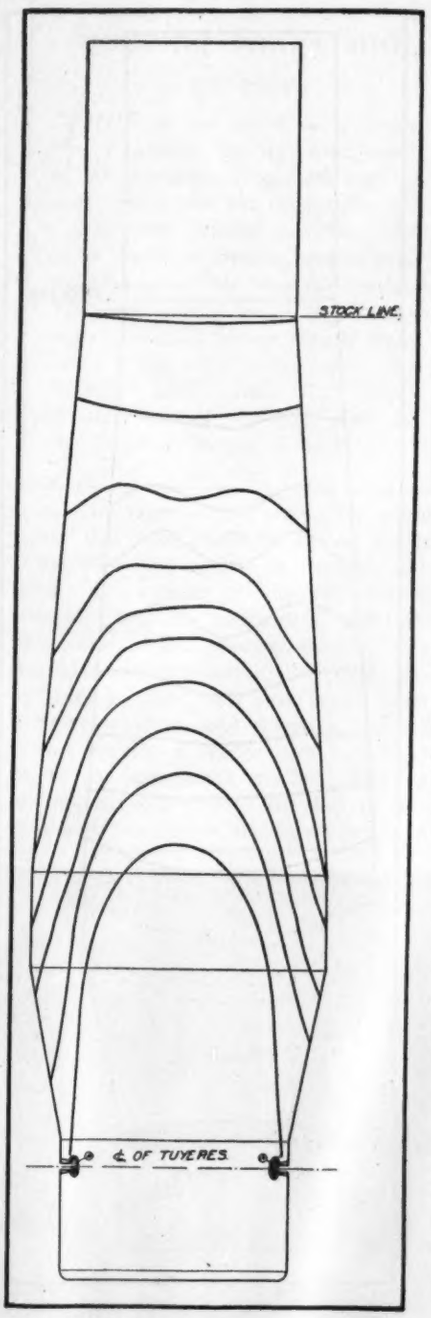


FIG. 2—FLOW OF STOCK WHEN COMBUSTION TAKES PLACE NEAR THE TUYERES

Shot Used in Tests

For the present purpose, the design selected corresponded as nearly as possible to a representative modern American blast furnace. The lines are shown in Fig. 1, which is a composite drawing of the lines of 50 furnaces now or recently in blast. The curved lines indicate the shape and position of a row of shot after a fixed number have been removed from the neighborhood of the tuyeres quantitatively to correspond to the actual combustion of coke lumps calculated from the gas composition found in the experiments of Perrott and Kinney. These curves are the average of six tests and denote the position of shot that have been in the furnace the same length of time Richards and Lodge have called them isochronous lines.

In charging alternately groups of differently marked shot, the layers retain their identity about two-thirds of the way down the mantle. At the bottom of the mantle and in the bosh, the layers tend to mix and great care is needed to identify the marked shot. There is a region of relatively stationary coke in the center of the hearth and bosh through which the gas flows readily; for the coke bed there is relatively permeable to gas flow, particularly as the interstices between the lumps are not filled with solid particles. This region of stationary coke is also the hottest part of the furnace, because no cold material is entering it from above. The distortion of the layers of stock begins as high as the stock line; the lumps of material near the furnace wall move more rapidly than those nearer the center. The frictional effect between a lump of coke and a brick wall, laid with any care and in a reasonable state of preservation, is much less than the frictional effect of an irregular lump of coke against another lump.

In Fig. 2, it has been imagined

that the coke is burned almost instantly at the nose of the tuyere; that is, the coke is supposed to be highly combustible. Here the tendency for the stock to move more rapidly along the walls is accentuated; the part of the furnace where there seems to be little movement of the charge is larger and the space through which the coke feeds down into the combustion zone is correspondingly smaller. With such a decrease in the space through which the stock descends, the time in the furnace would be shorter and the funnels, according to the analogy proposed by Van Vloten, would be smaller. Although no coke that is now in use would burn within such a short distance of the tuyeres, Fig. 2 is useful in showing more clearly the effect that localized combustion has upon the descent of the charge.

For comparison, Fig. 3 has been produced to show the flow of stock in a furnace when it is assumed, as Richards and Lodge did, that combustion takes place uniformly across the whole hearth area. In this case, the idle zone of the furnace has disappeared and the layers move down the furnace, retaining in general the shape taken at the stock line. Such a case is, of course, only imaginary, and in view of the large array of data collected it seems certain that when preheated air is forced into a bed of coke at temperatures of 1650 to 1800 degrees Cent., the O_2 will all be converted into CO within 30 to 40 inches of the entrance of the blast.

A comparison of the figures shows that a change in the space rate of combustion, which determines the positions in which coke is consumed at the tuyeres, has an effect on the movement of the stock in the blast furnace. The predominating tendency is for the coke to feed downward into the space where combustion is taking place, which effect is transmitted as high in the furnace as the stock line.

Interpretation is Difficult

The facts here indicated are difficult to interpret in terms of practical furnace operation. In the case of a fast-burning coke, the volume occupied by the region of stationary coke in the center of the bosh cuts down the available volume of the furnace; also, as the stock near the center of the bosh is moving very slowly, it must be moving at a greater speed toward the edge of the furnace. With a normal combustion zone extending into the furnace about 30 to 40 inches from the tuyeres, it seems reasonable to suppose that lumps of coke and calcined stone, not taken up in the fusion zone, tend to move downward near the bosh walls in the lower part of the furnace. Nearly all of the slag and metal probably descend nearer the center of the furnace. In the upper part of the furnace, where the fine ore particles retain their identity, the resistance to gas flow would seem to be greater near the walls and more than a proportionate part of the ascending gas stream would flow through the center of the furnace. In consequence, the temperature of the fast-moving materials nearer the walls is lower, for the interchange of heat between gas and solids is reduced. The excess of solids descending through the funnel-like or cone-shaped spaces near the walls and the deficiency of gas rising through this portion of the furnace lowers the temperature of the gas and of the solids. As a result, heat loss through the walls is less and the life of the lining is lengthened.

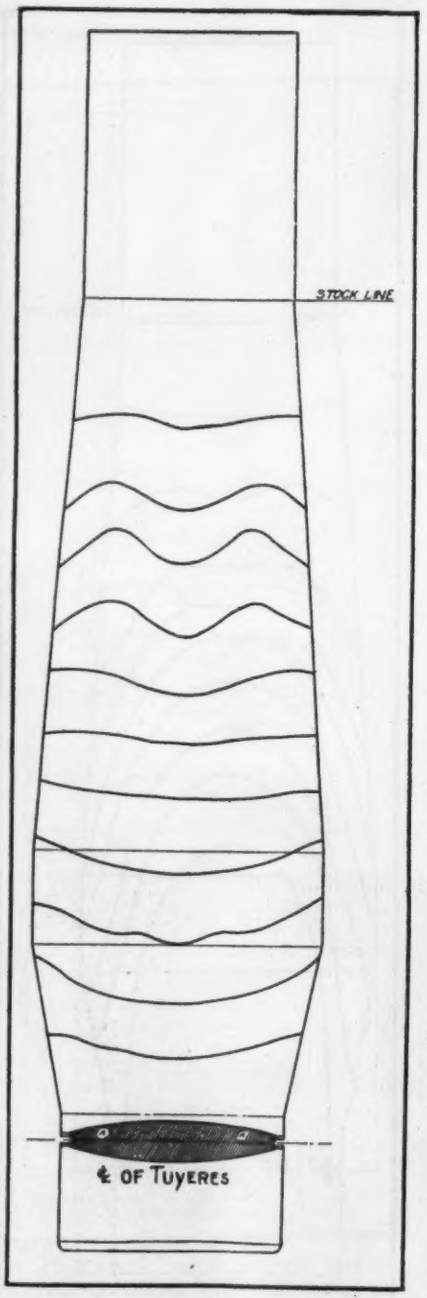


FIG. 3—FLOW OF STOCK WHEN COMBUSTION TAKES PLACE UNIFORMLY ACROSS ENTIRE HEARTH AREA

Some Influences Eliminated

It should be remembered that the comparison shown by Figs. 2 and 3 is between two imaginary cokes, one an extremely fast-burning coke and the other very slow. Within the range of variation in combustibility found in the furnaces investigated by Perrott and Kinney, the model experiments show no difference in the manner of stock descent.

In arranging the model experiments just described, the writers have intentionally eliminated a large number of disturbing influences. The selection of shot, in place of the irregular solids used by Richards and Lodge, was made to isolate the effect of the location of the combustion zones from other factors such as variations in size and shape of the particles.

The use of shot was suggested by the experiments of Kreisinger in his laboratory work on the drafts required to force air through fuel beds. Two sizes of lead shot were used in the model furnace; the size was found not to affect the result. The force, acting downwards on the solids, was changed by varying the angle at which the board was inclined. The magnitude of this force, when varied over wide limits, does not change the course of the materials.

The use of this form of model is recommended to those interested in studying the path of materials in their furnaces. The experiments can be carried out rapidly and light can be shed on a number of problems. The effect of bosh tuyeres, such as are used abroad, can be studied quantitatively. The effect produced by removing more shot from the tuyere on one side than from the opposite can also be studied.

It might be thought that the results of these model tests would be made more directly applicable, and hence more valuable, if the disturbing influences that have been eliminated were left in the experiment. If these were few in number, this would undoubtedly be true; but the number of variables is so great that the necessary experiments to cover the various combinations are practically innumerable. Every furnace has its own

(*Concluded on Page* 742)

Large Uses of Steel In Small Ways

THE size of a textile mill usually is indicated by the number of its spindles; thus a mill is spoken of as a 100,000-spindle mill. This does not mean, however, that the frame containing the spindles constitutes all of the mill equipment. It merely is a convenient way of making a comparison. Spinning which is one of the early operations in the manufacture of cotton cloth from the raw material, is accomplished by two methods, one requiring a mule and the other a spinning frame.

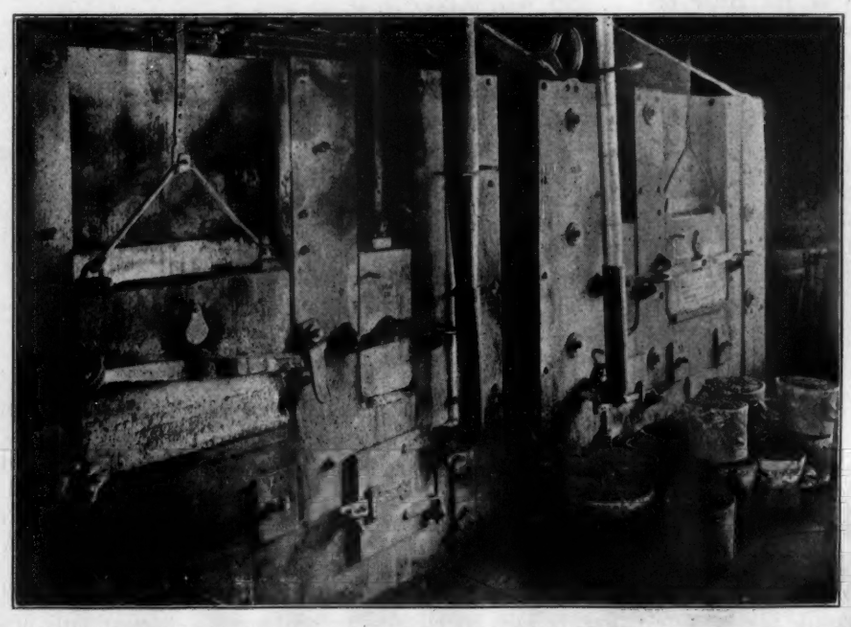
In this country spinning frames are by far the more common. Each spindle on a spinning frame contains a spinning ring over which the cotton fiber passes in the process of twisting. In most cases each ring carries a small loop through which the thread passes as it travels around the ring. This loop is called a traveler. Both the spinning rings and the travelers wear out, due to the continuous friction of one against the other and also due to the friction of the thread against both. For this reason a continuous production of rings and travelers is required for the cotton mill industry, and the annual tonnage consumed for this purpose is surprisingly large. Government statistics show that approximately 40,000,000 cotton spinning spindles are in place in mills in the United States. Of this number an average of about 34,000,000 usually are in operation. This means that 34,000,000 travelers constantly are circling around on the rims of 34,000,000 spinning rings. The life of a traveler ranges from one day to several weeks and of rings from one month to several years. If the average life of a ring were taken as five years, this would mean that with 34,000,000 in use nearly 7,000,000 would have to be replaced each year. The number of travelers required annually probably approaches 1,000,000,000. One of the principal spinning ring manufacturers estimates that 2500 tons of steel are used each year in the manufacture of rings and travelers, both of which require a special steel. Usually it is an open-hearth product, high in phosphorus and sulphur and low in carbon with manganese about 0.04 per cent. For the rings machinability is one of the first requisite qualities.

Spinning Rings and Travelers

THIS is the eighth of a series of articles dealing with some of the thousands of obscure uses of steel which in the aggregate go a long way toward absorbing the great American tonnage, and in proclaiming steel the universal metal. The first article on "Corsets" appeared Nov. 22. Other articles were "Pins," Dec. 6; "Pens," Dec. 20; "Cotton Ties," Jan. 17; "Steel Wool," Jan. 31; "Toys," Feb. 14 and "License Plates," Feb. 28.

Both the rings and travelers usually are case hardened to prevent excessive wear. However, inasmuch as the ring is a far more expensive article than the traveler, the traveler generally is made softer so that it will take the most of the wear. For the rings the steel in most cases is purchased in small bars which are rolled to the cross section desired, and then are cut off, formed around a mangle, and welded into rings. These are machined on special production lathes carrying formed tools which turn out the complete ring in one or two operations. From the lathes the rings pass to the case hardening department and then to the polishing room. Here they are given an exceptionally high polish with oil and emery. The rings are revolved while the operator holds a leather faced tool against them. This tool is dipped occasionally into the emery and oil mixture. The high polish is necessary because of the tendency of cotton fibers to catch on any roughness.

Pressed steel rings have been tried out but have failed to meet requirements and now are not used. Some companies drop forge the rings instead of welding them but this is not the usual method. As a rule travelers are made on presses and because of the quantity turned out, highly specialized machines have been developed so that the whole process from raw material to finished polished ring is nearly automatic. Both rings and travelers are made almost exclusively in New England. The chief companies making spinning rings are the Whitin Spinning Ring Co., Whitinsville, Mass.; Howard & Bul-



ANNEALING OVENS USED IN THE MANUFACTURE OF SPINNING RINGS. THE POTS AT THE RIGHT ARE PACKED WITH RINGS AND ARE READY TO BE PLACED IN THE OVEN

lough Machine Co., Pawtucket, R. I.; Draper Corp., Hopedale, Mass.; Saco-Lowell Shops, Lowell, Mass., and Whitin Machine Works, Whitinsville, Mass. Five companies make practically all of the travelers. These are the Sterling Ring Traveler Co., Fall River, Mass.; the Dary Ring Traveler Co., Taunton, Mass.; Victor Ring Traveler Co., Providence, R. I.; U. S. Ring Traveler Co., Providence, R. I., and National Ring Traveler Co., Providence, R. I.

Predicts Wide Use for Magnetic Analysis

Discussion of the magnetic analysis of steel featured the annual dinner of the advisory council of the Federated Engineers Development Corp. and the Burrows Magnetic Equipment Corp., recently at the Engineers club, New York. Dr. Bradley Stoughton, now professor of metallurgy at Lehigh university, described the results obtained by this method of analysis which was developed by Dr. C. W. Burrows, formerly of the bureau of standards, in co-operation with the Federated Engineers Development Corp. Dr. Stoughton explained that the new method makes possible a nondestructive test of every piece of steel. He said that the magnetic method of analysis locates flaws of all kinds and predicted that the method will become universal shortly in the steel industry.

A. Louis Allen, formerly president, Pyrene Fire Extinguisher Co., and now general manager of the Federated Engineers Development Corp., explained the function of the latter organization which is to assist the inventor to overcome various problems and to bring his invention to a marketable status. Dr. Michael Pupin, Columbia university, one of the country's foremost electro-physicists, spoke about the late Charles P. Steinmetz who was vice president of the Federated Engineers Development Corp. Dr. Pupin immigrated to this country the same time as Dr. Steinmetz and he spoke of the tremendous progress which was made by the latter. Incidentally, said Dr. Pupin, Dr. Steinmetz for a time worked on the idea of magnetic analysis, but his attention was deflected to other problems.

Promoting Better Vision

Lawrence W. Wallace of Washington, executive secretary of the American Engineering council, has been re-elected president of the Eye Sight Conservation Council of America, which from its national headquarters in New York is conducting a nation-wide campaign to promote better vision in education and industry. Mr. Wallace also was elected a member of the council's board of directors. Other engineers on this board are F. C. Caldwell, professor of electrical engineering in Ohio State university, and Dr. Morton G. Lloyd, chief of the safety section of the United States bureau of standards and acting president of the American Society of Safety Engineers. Engineers elected to the board of councillors include Joseph W. Roe, professor of industrial engineering in New York university and former president of the Society of Industrial Engineers, and G. E. Sanford, Lynn, Mass., former president of the American Society of Safety Engineers.

Engineer Discusses Fuel Saving Problems

While America stands ahead of other countries in many respects, it is far behind in the saving of fuel in smelting metals, according to Axel Hermansen of Ingelstad, Sweden, world renowned inventor of smelting processes, civil engineer and Knight of Norway, who arrived in this country recently. Dr. Hermansen is in America in the interest of introducing fuel-saving furnaces in the Pittsburgh district and other parts of the country.

In Europe, said Dr. Hermansen, the problem always has been fuel, and because coal is costly and hard to obtain, efforts for years have been directed toward fuel-saving devices. In America, however, it is different; here there is plenty of coal and little thought in the past has been paid to the saving of it, he said. It has been only in the last few years, he added, that America has awakened to the need of fuel-saving.

For the last 28 years Dr. Hermansen has been developing fuel-saving processes, and at present there are 10,000 furnaces in Europe using high-power furnace devices, many of his own invention. In America, he said, there are only 40 or 50 of these. He said that some years ago he was able, with his inventions, to cut the cost of fuel in half by one of his methods. Later, finding it possible to use waste gases, he has been able again to cut the cost of fuel in half.

Dr. Hermansen told of the many furnace of his construction in Germany, Sweden, Norway, France and other countries. For his work the Norwegian government knighted him. During the war, he said, his business suffered much, but he feels that conditions soon will become brighter in other countries.

Study Flow of Stock in Blast Furnaces

(*Concluded from Page 740*)

combination of factors that determines the path of the materials. Ratio of bosh to hearth diameter, bosh angle, batter in the mantle, stockline diameter, diameter and angle of the bell, screen analyses of the coke, stone, and ore, relative amounts of these materials charged, the presence of stickiness in those regions where the slag is first formed into a pasty semifluid mass, the mechanical force of the blast upward through the furnace—all these factors affect one another and the resultant effect on the motion of the stock is dependent on all of them acting at once. The effect of the location of the combustion regions on the descent of the stock is probably the easiest of them all to study and the writers feel that the foregoing experiments bear directly on it and show the possibilities of the problem in a simple manner.

It was stated in the beginning that the question of how far the data collected by Perrott and Kinney go toward convincing furnace operators that cokes do not differ widely in combustibility is in doubt. It is hoped, however, that the material which has been presented will help to establish a common conception of the nature of the combustion in the blast furnace, and that some light has been shed on the probable effect of the extent of the combustion zone on the descent of the charge. In view of the fact that coke producers and furnace operators, as a whole, believe that coke combustibility plays a large part in blast furnace operation, performance tests either on a commercial furnace or on an experimental basis should be conducted.

Studies Temperature in Charcoal Ironmaking

In a study of temperatures encountered in charcoal iron furnace practice, being conducted by the Minneapolis experiment station of the bureau of mines, samples of charcoal and slag have been obtained from four charcoal iron furnaces for determining the amount of sulphur in the fuel and that carried off in the slag. The results of these analyses will be incorporated into a report comparing the sulphur which is present in the materials used in charcoal and coke furnaces and the temperatures which are attained. Due to the relatively small amount of sulphur in charcoal little attention is given to the quantity of this element in the raw materials.

Selling Methods

Of Bethlehem Steel Co. Are Examined at Trade Commission Hearing

New York, March 11.—Counsel for the federal trade commission in the hearings of the commission's complaint for the dissolution of Bethlehem Steel Co.'s acquisition of the Midvale Steel & Ordnance Co., Cambria Steel Co. and Lackawanna Steel Co. is seeking to show the Bethlehem company is more arbitrary than other steel companies in enforcing the terms of its contracts.

Eugene Bogert, president of Bogert & Carlough, Paterson, N. J., testified he buys 500 to 600 tons of flats and shapes a year and 500 to 600 tons of small angles and special sections for steel sash. A special Z bar is finished only by the Pardee Steel Corp. which is the only mill having rolls for that section. Two special T bar sections were bought from Lackawanna Steel Co. the only concern having the rolls. Since the merger Bethlehem has furnished them. He said his complaint is that while Lackawanna furnished these shapes at 33 1/3 per cent above bar prices, about 80 cents extra, Bethlehem first charged 75 cents extra and later $1 on one and $1.12½ on the other. He said Bethlehem promised if the cost justified, it would reduce the extras.

Mr. Bogert said at the end of the war he had tonnage on firm contracts from Lackawanna and Bethlehem. The former cancelled. Bethlehem shipped tonnage already rolled and later cancelled the remainder. He was not asked what Lackawanna would have done in case it had already rolled some of the material.

R. B. Baker, purchasing agent for the Endicott Forge & Mfg. Co., Endicott, N. Y., manufacturer of drop forgings for the automobile trade, buys 75 per cent of his steel in alloy bars from Bethlehem and the Central Steel Co. A small tonnage of carbon special forging bars are bought from Bethlehem, Donner and N. & G. Taylor companies before and since the acquisition.

Other witnesses included John B. Carse of Ogden & Wallace, New York, Ralph Dickey, secretary of the New York Wire & Spring Co., Hoboken, N. J., Peter Ogoe, general manager of Igoe Bros., New York, August J. Dilley, purchasing agent for J. Wiss & Son Co., Newark and C. H. Lewis of the Irving Iron Works Co., Long Island City, N. Y.

The American Museum of Safety, 120 East Twenty-eighth street, New York, was opened recently. A. A. Hopkins has been made director and is in charge of assembling and presenting specimens of safety devices, materials and equipment.

Societies News

Electrochemists Prepare for Meeting

ONE of the features which has been arranged for the spring meeting of the American Electrochemical society in Philadelphia April 24-26, is a round table discussion on "Electric Furnace Refractories." A number of papers will be presented on this subject. Two symposiums also have been arranged, one on "Organic Electrochemistry" and the other on "Recent Progress in Electrodeposition." Papers which will be presented at the latter symposium will discuss electrorefining of metals, electroreduction of metals, electroforming of metals, and electroplating of metals. The entertainment committee already has scheduled a number of inspection trips to various plants in the Philadelphia district.

* * *

Announce Annual Safety Congress

The thirteenth annual safety congress of the National Safety council will be held at Louisville, Ky., Sept. 29-Oct. 3, according to an announcement made by W. H. Cameron, managing director.

* * *

Will Hold Safety Conference

Industrial safety and health and public safety will be considered at the Pacific Safety conference to be held at the St. Francis hotel, San Francisco, April 7-9. The meetings are to be held under the joint auspices of the Society of Safety Engineers of California and the engineering section of the National Safety council. Three of the four sessions will be devoted to industrial safety and health. Lewis A. DeBlois and Sidney J. Williams, president and chief engineer, respectively, of the National Safety council will attend the conference.

* * *

Chemical Medal Is Awarded

At a meeting of the New York section of the American Chemical society March 7, Dr. Charles A. Kraus, professor of chemistry, Brown university, was presented with the Nichols medal, which is awarded annually by that section "for the research published during the current year which in the opinion of the jury is most original and stimulative to further research." Dr. Kraus has investigated the properties of nonaqueous solutions. Working with liquid ammonia solutions, he has shown that many metallic compounds exhibit unexpected and peculiar properties.

* * *

Concrete Institute Elects Officers

A. E. Lindau, president American System of Reinforcing, Chicago, was elected president of the American Concrete institute at its twentieth annual convention in Chicago recently. M. A. Upson, Raymond Concrete Pile Co., New York, and Edward D. Boyer, Atlas Portland Cement Co., New York, were elected vice presidents. Proposed standard specifications for concrete floors, concrete sidewalks and concrete sewers were discussed. Addresses included one by Albert Kahn, Detroit, on the construction of reinforced concrete factories, and one by Mr. Lindau on concrete bridges. It was brought out that concrete construction now calls for approximately 1,000,000 tons of reinforcing bars annually. Harvey Whipple continues as secretary-treasurer of the institute with headquarters at 1807 Grand boulevard, Detroit.

Convention Calendar

April 1-3—American Association of Oil Burner Manufacturers. First annual meeting, Hotel Chase, St. Louis. Leod D. Becker, 518 Bank of Galesburg building, Galesburg, Ill., is secretary.

April 2-3—Association of Iron and Steel Electrical Engineers, combustion engineering section, William Penn hotel, Pittsburgh. John F. Kelly, 513 Empire building, Pittsburgh, is secretary.

April 23-24—National Metal Trades association. Annual convention at the Hotel Astor, New York. Louis W. Fischer, Peoples Gas building, Chicago, is secretary.

April 24-26—American Electrochemical society. Spring meeting, Bellevue-Stratford hotel, Philadelphia, Dr. Collin G. Fink, Columbia university, New York, is secretary.

April 28-30—American Gear Manufacturers' association. Spring meeting, Lafayette hotel, Buffalo. T. W. Owen, 2443 Prospect avenue, Cleveland, is secretary.

April 30-May 2—Society of Industrial Engineers—Annual convention at Buffalo. George C. Dent, 608 South Dearborn street, Chicago, is secretary.

May 5-10—Sheet Steel Executives. Second annual convention under auspices of National Association of Sheet and Tin Plate Manufacturers, Hotel Greenbrier, White Sulphur Springs, W. Va. W. S. Horner, 1832 Oliver building, Pittsburgh, is chairman.

May 8-9—British Iron and Steel institute. Annual meeting at the Institution of Civil Engineers, London. G. C. Lloyd, 28 Victoria street, London, is secretary.

May 19-21—Southern Supply and Machinery Dealers' association, National Supply and Machinery Dealers' association, and American Supply and Machinery Manufacturers' association—Triple convention at Hotel Cleveland, Cleveland. Alvin M. Smith, Smith-Courtney Co., Richmond, Va.; T. James Fernley, 505 Arch street, Philadelphia; and F. D. Mitchell, 1819 Broadway, New York, are the secretaries respectively.

May 20-23—National Association of Purchasing Agents. Annual convention, Mechanics Hall, Boston. W. L. Chandler, 19 Park place, New York, is secretary.

May 22-23—American Society for Steel Treating. Spring sectional meeting, LeClaire hotel, Moline, Ill. W. H. Eisenman, 4600 Prospect avenue, Cleveland, is secretary.

May 22-23—National Pipe and Supply association. Annual meeting, Hotel Cleveland. George L. McIlvane, 909 Oliver building, Pittsburgh, is secretary.

May 26-29—American Society of Mechanical Engineers—Spring meeting Hotel Cleveland, Cleveland. Calvin W. Rice, 29 West Thirty-ninth street, New York, is secretary.

Defects Found in Kansas Court System

New York, March 11.—On the eve of the United States Supreme Court decision in the so-called Howat case, which many authorities believe will determine the future of the Kansas court of industrial relations, a report was made public today by the national industrial conference board in which the history and accomplishments, the difficulties and shortcomings which have beset the Kansas tribunal since its formation four years ago are reviewed and analyzed. The board has devoted over a year to its investigation and survey of the court.

The time has been too short, the report asserts, for a conclusive appraisal of the court's value, but enough has been adduced by the survey to warrant the suggestion that the court's powers go beyond any strict construction of the public interest in Kansas industries. Furthermore, its ability to accomplish regularity and continuity of industrial production in the face of general economic conditions has not received a clear test, either legally or practically. Whether or not the court survives, the board finds, its history and scope have been too limited to develop any body of general principles governing industrial relations, by the precedent of which disputes might settle themselves. The report states:

"Except in the case of public utilities, the court in practice has offered no solution of the problem of protecting the employer's interest in being able to operate so as to secure a fair return on investment, as against the employe's interest in fair wages, hours and working conditions.

"The court has upheld the employe's interest in fair wages, hours and working conditions, and in the fixing of these through collective bargaining; but it has not solved the problem of defining these rights or determining the limits of free contract in relation to unionism.

"The court has been played upon by public opinion and political influences, and those connected with it have had definite points of view on current economic and social problems. There is no conclusive indication of the extent to which the court has temporized with or been influenced by these factors, but since the judges are subject to political appointment, it is clear that the court might be seriously hampered by local political influences. The danger in this situation has been recognized by the court and the public."

Workmen Rewarded

Forty-eight employes in plants of the General Electric Co. have been cited by the company for meritorious work. The awards, which the announcement describes as comparable to the honors conferred by engineering and electrical societies, were the first to be made under the Charles A. Coffin Foundation, established as a tribute to the founder and first president of the company.

The honors in each case went to a worker who had "suggested some new method of shop or manufacturing practice which increased efficiency or effected economy." One of the winners was a stenographer, who simplified the system of customers' records.

Cost of Living Remains Practically Stationary

Cost of living in the United States on Jan. 15, 1924, has decreased two-tenths of 1 per cent from the level of Dec. 15, 1923, according to the national industrial conference board, New York. In the month there was an increase in the average cost of clothing and decreases for fuel and food. These changes were each less than 1 per cent. Between July, 1920, when the peak of the rise in the cost of living since 1914 was reached, and January, 1924, the cost of living decreased 19.5 per cent. The increase since July, 1914, was 64.6 per cent. The accompanying table shows in detail the percentage of increases above average prices in July, 1914.

Living Costs Compared

July, 1914 to		All items	Foods	Shelter	Clothing	Fuel and light	Sundries
Jan.,	1922	61.4	50	69	56	78	78
Feb.,	1922	57.7	42	69	56	77	77
Mar.,	1922	54.7	39	65	56	74	74
Apr.,	1922	54.8	39	65	55	74	74
May,	1922	54.9	39	65	56	74	74
June,	1922	55.4	41	65	53	74	74
July,	1922	55.6	42	65	54	74	74
Aug.,	1922	54.5	39	65	53	81	72
Sept.,	1922	55.6	40	65	55	87	72
Oct.,	1922	57.1	43	65	57	87	72
Nov.,	1922	58.4	45	67	60	86	71
Dec.,	1922	58.9	47	67	56	87	71
Jan.,	1923	58.1	44	67	60	87	71
Feb.,	1923	57.5	42	67	62	87	71
Mar.,	1923	59.2	42	70	68	86	73
Apr.,	1923	59.1	43	70	67	80	73
May,	1923	60.3	43	72	74	78	73
June,	1923	60.1	44	72	69	78	73
July,	1923	61.9	47	75	70	76	73
Aug.,	1923	61.6	46	75	71	76	73
Sept.,	1923	63.4	49	75	75	76	73
Oct.,	1923	64.1	50	75	76	78	73
Nov.,	1923	65.3	51	80	74	76	74
Dec.,	1923	65.0	50	80	75	76	74
Jan.,	1924	64.6	49	80	76	75	74

Await Rail Wage Demand

Railway officials are anticipating demands for a wage increase of 4 cents an hour from 200,000 members of the Federated Shop Craft unions in view of the initial demand for an increase made on the Southern railway and its subsidiary, the Mobile & Ohio, by the representatives of the unions. Not all the railroads will be affected, since some have company unions.

Huge Coal Loss Due to Injury of Miners

Washington, March 11.—Nonfatal injuries occurring at coal mines in the United States number approximately 200,000 per year and represent a total coal tonnage loss valued at about $39,000,000, according to a statistical study made by the department of the interior, through the bureau of mines. The average mine accident entailing only temporary disability means a loss of production of approximately 60 tons of coal, it is estimated. It is calculated that each accident of this nature results in a time loss to the worker of 15 days. With the daily output of coal per man figured at four tons, and with coal valued at $3.25 per ton at the mine, the average value of lost tonnage for each accident entailing temporary disability is $195. The time and monetary loss per accident would, of course, be increased if accidents entailing permanent disability or death were included in the tabulation.

The Pennsylvania state compensation law does not provide for compensation when disability terminates before the tenth day after the accident, the bureau points out. This means that approximately 44 out of every 100 mine accidents in Pennsylvania are not covered by the compensation law. In states having a 7-day waiting period, and therefore not compensating a miner if he is disabled six days or less, the bureau of mines figures show that about 30 out of every 100 accidents remain in the uncompensated class.

Metal Trades Wages Up

Average hourly earnings in New England manufacturing establishments represented in the National Metal Trades association increased from 53.5 cents in July, 1923, to 56 cents in January. The increase in New York, New Jersey and Pennsylvania was from 60.6 to 62.2 cents; in Ohio and Indiana, from 57 to 59.1 cents; in Michigan, from 56.4 cents to 58.4 cents, and in Illinois, Wisconsin and Missouri, from 57 to 58.8 cents. The average for all districts in January was 59.3 cents, as compared with 58.3 cents last September.

The averages are based on wages paid in machine shops, foundries, pattern shops, and to common labor, and includes only those working on an hourly wage arrangement. A few representative companies in each district are selected for the comparisons, issued by the metal trades association.

Chicago Car Builders Well Booked

Unfilled Orders of 19,683 Freight Cars on March 5 Sufficient To Keep Plants in Chicago District Operating at Least Four Months—Productive Capacity of Various Manufacturers in Territory Is Shown

BY E. C. BOEHRINGER

CHICAGO, March 11.—Builders of railroad freight cars in the Chicago district have on their books today sufficient business to keep them operating, on the average, practically full until Sept. 1. The freight cars they have under contract call for the use of between 220,000 and 270,000 tons of finished steel such as plates, shapes and bars and approximately 205,000 tons of iron and steel, largely castings, in their trucks.

A survey of the status of Chicago district builders reveals that as of March 5 they had unfilled orders for 19,683 freight cars. But two of the larger companies have not yet distributed among their branch plants the recent large orders they received from the New York Central and Pennsylvania railroads, and it is a reasonable assumption that 7700 of these cars will be allocated to their Chicago plants, bringing the total up to 27,383.

A fair estimate of the monthly capacity of Chicago district car builders is 4700 cars. This means that the unfilled car orders definitely on the books of these builders will take them an average of four months to turn out and if the cars that logically should come to Chicago out of the New York Central and Pennsylvania railroad lettings are so assigned, the time will be extended to approximately six months. These statistics do not include the Mt. Vernon Car Mfg. Co., Mt. Vernon, Ill., in the Chicago district, although it is usually classed with the Chicago plants as one of the western builders. This company has unfilled orders for 805 freight cars as of Mach 5.

The Standard Steel Car Co. is revealed as being most favorably situated of any of the car building companies in the Chicago district. It has 6300 cars to work off. Recently this company booked 5500 cars for the New York Central and 2000 for the Pennsylvania.

BUILDING of railroad cars and in a less degree, agricultural implements are two of the most important outlets for iron and steel products in the West. Hence the accompanying analyses of the situation in these industries after personal investigation by the editorial representative at Chicago of IRON TRADE REVIEW *has a timely bearing upon the present iron and steel situation.*

Chances favor the construction of the New York Central order in the company's plant at Butler, Pa., and if this happens the 2000 Pennsylvania cars doubtless will come to Chicago.

In addition to the 1750 cars the Pressed Steel Car Co. is building at Chicago for the Wabash railroad, it has orders for 3000 cars for the Pennsylvania, 2500 for the New York Central and 200 ore cars for the Northern Pacific. It is thought that all of these cars will be assigned to the Pressed Steel plant in this district. With the Standard and Pressed Steel companies each having a monthly capacity of 1000 cars at Chicago, this would keep Standard operating full time for 8 1/3 months and Pressed Steel 7½ months.

The Pullman Co., with a monthly capacity of 900 cars, has contracts for 4500 cars. The General American company, having a capacity of 750 cars, has six months works ahead in 4385 cars it has yet to deliver. The American Car & Foundry Co. has unfilled orders for 2000 cars, the Ryan Car Co. for 500 and the Keith Railway Equipment Co. for 248. In general terms, the construction of a freight car will involve the consumption of 8 to 10 tons of finished steel and about 7½ tons of iron and steel in the trucks and equipment beneath the body.

The calculation that the cars assigned to Chicago district plants will keep them operating, on the average, practically full to Sept. 1 is based on the assumption they have the material assembled for immediate construction. Since the contracts have been let at various times it is impossible to ascertain the exact status of every order. Generally speaking, at least a month elapses between the signing of the contract and the placement of requisitions for the steel and the various accessories. Then, of course, time must be left for delivery. But indicative of the condition of the Chicago district it may be said that the car building plants are booked for six months.

Contract Status of Chicago Car Builders

Figures as of March 5

Company	Cars per month	Definitely assigned	Contracted but unassigned cars likely to go to Chicago plant	Total
Standard Steel Car Co.	1,000	6,300	2,000	8,300
Pressed Steel Car Co.	1,000	1,750	5,700	7,450
Pullman Co.	900	4,500	....	4,500
General American Car Co.	750	4,385	....	4,385
American Car & Foundry Co.	700	2,000	....	2,000
Ryan Car Co.	250	500	....	500
Keith Railway Equipment Co.	100	248	....	248
Total	4,700	....	....	27,383

Farm Implement Industry Reacts Slowly

MOLINE, Ill., March 11.—Manufacturers of agricultural implements in this district, and here is an assemblage of implement works not to be equaled elsewhere in the world, are operating at an average of 60 per cent of capacity at this time. The rate appears to be 75 per cent, with most about 50 per cent.

Whether the agricultural implement industry as a whole will consume as much steel in 1924 as in 1923, despite reports of a great revival in the industry, is a matter of doubt. Some

(*Concluded on Page 747*)

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

A. L. RALSTON, who has become general sales manager of the Braeburn Alloy Steel Corp., Braeburn, Pa., manufacturer of high speed carbon and alloy tool steels formerly was connected with the Crucible Steel Corp. of America. His association with the latter company covered a period of 22 years. During that time he was Pittsburgh district manager, assistant general sales agent, and for the last two years, Detroit district manager.

Walter I. Crocker, Pittsburgh, has become associated with the sales forces of the Braeburn Alloy corporation.

* * *

W. L. Reed, blast furnace superintendent with the Toledo Furnace Co., Toledo, O., has resigned as of March 1.

* * *

T. B. Rettig, formerly secretary chamber of commerce, Niles, O., has been appointed sales manager, Waddell Steel Co., Niles, O.

* * *

Joseph Malborn has been appointed superintendent of sheet mills of the Sharon Steel Hoop Co., succeeding D. R. Fithian, now superintendent Waddell Steel Co.

* * *

C. C. McDermott, who has represented the Brown Instrument Co., Philadelphia, in Chicago territory, and E. F. Irwin, who has been factory manager of the Brown company, have become affiliated with the Republic Flow Meters Co., Chicago, which soon will begin the manufacture of pyrometers.

* * *

Valentine B. Schupp, formerly sales manager of the Sizer Steel Corp., Buffalo, N. Y., together with Mr. Mansfield, assistant sales manager of the Sizer corporation, have formed a partnership to be known as Schupp & Mansfield with offices in Ellicott Square, Buffalo. The partnership will represent in a sales capacity the following companies: Erie Forge Co., Erie, Pa.; Hartford Tube Products Co., Hartford, Conn.; Michigan Smelting & Refining Co., Detroit and the Eureka Co., North East, Pa.

* * *

J. S. Ruble, vice president in charge of construction for H. K. Ferguson Co., Cleveland, engineer and contractor, will sail from San Francisco for Japan March 20. He will be in the Orient for at least two months to further supervise the construction of a large electrical engineering plant being erected for the Shibaura Engineering Works near Yokohama by the Ferguson company. Mr. Ruble only a short time ago returned to Cleveland from Japan, where he directed the initial work on the plant.

A. L. RALSTON

* * *

Frederick K. Vial, chief engineer of Griffin Wheel Co., Chicago, and consulting engineer of the Association of Manufacturers of Chilled Car Wheels, addressed the Chicago Foundrymen's club at the Chicago City club, March 10.

* * *

H. W. Fernald for many years resident manager at Boston for Rogers, Brown & Co., has resigned to become affiliated with Reed, Fears & Miller Inc., at Boston. Mr. Fernald will continue to be identified with the sale of pig iron throughout New England. The office of his new affiliation is at 141 Milk street.

* * *

E. C. Myers, recently appointed representative for San Francisco by the Falk Corp., Milwaukee, manufacturer of gears, couplings, etc., formerly was connected with the General Electric Co. at Schenectady, N. Y., and San Francisco. Territory covered by Mr. Myers will consist of California, Oregon and Washington, with headquarters at 320 Rialto building, San Francisco.

Charles C. Walsh, recently appointed by the Falk Corp., as Detroit representative with offices at 1500 Real Estate Exchange building, was connected formerly with the following companies; Michigan Central railroad, Morgan-Wright Rubber Works, Detroit; S. K. F. Ball Bearing Co., Hartford, Conn., and W. C. DuComb Co.

* * *

A. H. Ellison, recently connected with the New York and eastern office of the Cleveland Crane & Engineering Co., Wickliffe, O., formerly was associated with the Clyde Iron Works, Duluth. He served as eastern manager of the latter organization for eight years. Mr. Ellison will have his headquarters at 50 Church street, New York.

* * *

Sir Hugh Bell, one of the most distinguished iron and steel manufacturers in Great Britain, has just passed his eightieth birthday and is still actively attending to his business affairs. He is the principal owner of Bell Bros., Ltd., Middlesbrough, manufacturer of pig iron, now a subsidiary of Dorman Long & Co., of which Mr. Bell also is a director.

* * *

A. D. Bach, recently connected with Henry Disston & Sons, Inc., Philadelphia, in the steel sales department in its New England territory, formerly was connected with the Cleveland office of Atlas Steel Corp., Dunkirk, N. Y. Mr. Bach was graduated from Lehigh university. He was connected with Wheelock, Lovejoy & Co., Inc., New York, wire, steel and iron manufacturer before joining the Atlas corporation. He took up his duties with the Disston company March 1.

* * *

John K. Light, recently appointed manager of the Detroit office of the Root Co., Bristol, Conn., manufacturer of

Farm Implements Slow

(*Concluded from Page* 745)

executives believe that unless orders received in the contracting season later in the year prove unexpectedly large, the 1924 total of consumption will do well to exceed 85 per cent of last year's.

Manufacturers of implements have had some perilous experiences since the banner year 1920. The implement people themselves appraise their situation much less favorably than do producers of the steel they consume.

Business picked up a little in 1922, and toward the end of the year, when price advances began to be announced, a decided stimulus came. In 1923 came further advances, though many manufacturers did not reach the top of their prices until the end of the contracting season. Implement prices today are approximately at the same level as the peak reached at the end of the 1923 buying season. One executive estimates that operations of all manufacturers in 1923 averaged 50 to 55 per cent of the six-year period ended with 1920. This man believes only unusual activity later in the year will make 1924 top 1923.

The manufacturer of implements has only one customer, the farmer, and when his pocketbook is thin no smoke comes out of the implement works' stacks. The so-called western wheat belt still is in a lean state, as recent bank failures and the collection of a vast loan fund indicate. In the Northwest, like Minnesota and Wisconsin, improvement is in sight and buying of implements is better but this is attributed to the fact that the dairy industry in these states never fully flattened out. In the past 18 months some implement makers have sold more machines in New York state than in the entire wheat belt.

The unsettled condition of the implement market has naturally upset makers. Formerly they estimated in June or thereabouts the tonnage of steel they thought would be required for the contracting season's business, and largely placed their year's requirements in June. Now in the main, they have gone over to quarterly buying. They claim they have always been able to get prompt delivery, even of bars, and a return to annual buying is improbable. The fact of prompt delivery of raw materials has served to keep down inventories. At present stocks of finished equipment relatively are not nearly so high at the works as with local dealers.

Henry Ford and his engineers no longer cast a menacing shadow over Moline. Once Ford and his mechanical corps threatened completely to revamp the implement industry. When the Ford organization first found that the present-day plow had a maximum speed of only 1½ miles per hour, regardless of whether horse or tractor drawn, it was going to evolve a new plow that would tear up the earth at the rate of at least 4 miles an hour. But Ford soon learned that even so humble and unassuming an object as a plow is scientifically designed, and that James Oliver and John Deere really gave the world something. For a few months it had been rumored that Ford was going to take over the Emerson-Brantingham plant at St. Paul and make harvesters there, but the International Harvester Co., now has taken that plant. This depression in the implement industry has not, however, been in vain. It is trite, of course, to state that the trouble with agriculture is that the farmer receives too little for what he raises and has to pay too much for what he buys, yet that is a concise and precise statement. Mechanical genius has never before been so assiduous in its effort to lower production costs, and almost all of the going implement works in this district are now experimenting with many labor and cost-saving devices.

Obituaries

MATTHEW CHAMPION, for 25 years general superintendent of the Champion Rivet Co., Cleveland, died March 10 at his home in Cleveland, following an illness of about two years. He was 74 years old and prior to becoming connected with the Champion Rivet Co., of which his brother, David Champion, is president, was superintendent of the Cleveland shops of the Lake Shore railroad, now part of the New York Central system.

* * *

George Frank Konold, head of the Warren Tool & Forge Co., Warren, O., died in a hospital there March 3 at the age of 59 years. Before going to Warren he had been superintendent of the Iron City Tool Works, Pittsburgh, for 23 years.

* * *

C. G. Wilson, founder and president of the C. G. Wilson Body Co., Detroit, maker of automobile bodies, and one of the pioneers in this business died March 7 at St. Petersburg, Fla. He was 80 years old. Operation of the plant in recent years has been largely under supervision of his son. C. Haines Wilson.

* * *

Dr. A. C. Lowrey, president of the Marting Iron & Steel Co., Ironton, O., died at his home in that city March 1. Mr. Lowrey had been in ill health for several years. For the past several years he had taken no active part in management of the Marting company.

* * *

Charles R. Sturdevant, for 15 years educational director of the American Steel & Wire Co., at Worcester, Mass. and Cleveland, died at his home in the latter city on March 4. He was born in Pennsylvania in 1868 and was graduated from Cornell university in 1892. Following graduation he worked in the laboratories and drafting room of the Chicago, Burlington & Quincy railroad, and for two years was an engineering contractor installing electrical plants. From 1896 to 1901 Mr. Sturdevant was in charge of the electrical engineering department of the Kentucky State college at Lexington and in 1901 and 1902 he was connected with the E. P. Roberts Consulting Engineering Co., Cleveland. He joined the American Steel & Wire Co. in 1905. Mr. Sturdevant presented a paper on the "Educational Work in the Wire Industry" at the spring meeting of the American Iron and Steel institute in 1921.

* * *

Burton S. Daugherty, 54 years old, for 10 years district manager of Richards-Wilcox Mfg. Co., Auburn, Ill., at Cleveland, died at his home in Lakewood, O., March 6. Before joining the Richards company, manufacturer of hardware supplies, Mr. Daugherty was a department manager of W. Bingham Co., Cleveland.

* * *

Frank Harrison Boyle, for many years head of the architectural department of Milliken Bros., Inc., 233 Broadway, New York, died recently at his home in Brooklyn, N. Y. He was born in St. Louis 56 years ago. At an early age he went into the hardware business and later became connected with the William R. Pitt Composite Iron Works, New Rochelle, N. Y. From this firm he went to Milliken Bros.

* * *

W. H. Inman, aged 79 years, one of the organizers and for many years senior partner of Pratt & Inman, Worcester, Mass., died recently at his home there. Pratt & Inman operates a warehouse devoted largely to steel specialties. Mr. Inman has followed closely the steel industry in New England since 1871. During the past three years he has been inactive in business and has devoted his time to travel.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

PLANS have been completed for erection of a new administration and office building for Carborundum Co., Niagara Falls, N. Y. The building and its equipment will cost approximately $300,000. The structure will be located on a plot of ground 394 x 217 feet on Buffalo avenue near the Niagara Falls Power Co.'s plant. It will be 200 feet long, 62 feet deep and will include three stories and a basement. L. J. Hall, the company's construction engineer, will supervise the work. The work of building is under way and it is expected that the plant will be ready for occupancy by November.

* * *

JENKINS BROS., Bridgeport, Conn., valve manufacturer, recently added a new plant to its operating capacity. The additional facilities will be used for manufacture of iron valves which previously had been made on contract with other manufacturers.

* * *

UNION IRON WORKS, Los Angeles, has received the contract for steel work on the new plant to be built by Republic Brass & Mfg. Co., at Vernon, the industrial district of Los Angeles. The plant will be 300 feet in length, 1 and 2-story, steel frame, brick and corrugated iron construction.

* * *

BIDS have been opened by the Carnegie Steel Co. for the largest coke unloading plant on inland rivers for its plant at Mingo Junction, O. on the Ohio river. The new structure will have a frontage of 1650 feet along the river front. Work which is to be completed by Sept. 1 will involve 75,000 cubic yards of concrete and 1000 piles.

* * *

ELECTION of officers and directors by the Crawfordsville Wire & Nail Co., Crawfordsville, Ind., resulted in William P. Herron being chosen president; Irwin A. Detchon, vice president; Clifford D. Voris, secretary and general manager. The three officers and Chase Harding, Benjamin Crane, P. C. Somerville and H. E. Greene Jr., are directors.

* * *

OFFICERS and directors of the American Sash Weight Foundry Co., Davenport, Ia., recently were elected, with the following being named: August E. Steffen, president; Charles E. Robeson, vice president; Mathias F. Steffen, secretary. Directors chosen were the officers and Dr. Kuno Struck, W. J. Blunk, H. Burrman and B. F. Aufderheide Jr.

* * *

THE Southern Machinery & Supply Co. was formed recently at 310 Tallapoosa street, Montgomery, Ala. The company handles a complete line of mill supplies, machinery, etc., with salesmen covering the southeastern territory. Joseph C. Fischesser of Montgomery, who has been identified with the mill supply and machinery business in the South for the past 20 years, heads the new company.

* * *

THE new foundry of Phillips & Buttorff Mfg. Co., Twelfth avenue north, Nashville, Tenn., has been completed and occupied, giving the company what is now said to be one of the largest and most complete foundry plants in the southern states. The new plant is three stories in height, 100 x 136 feet, making the company's total foundry properties about 20 acres. This unit will be used for the manufacture of furnaces.

* * *

ALL officers and directors of the Osgood-Bradley Car Co., Worcester, Mass., were re-elected at a recent annual meeting. John E. Bradley is president, William J. McKee, Worcester, Robert L. Gordon of New York and Eben F. Keith of Sagamore, Mass., vice presidents and Thomas H. Gillespie, Butler, Pa., treasurer. The president, vice presidents and J. Frank Drake, John M. Hansen and Richard B. Mellon, Pittsburgh, are directors.

* * *

THE Kobert Machine Co., Inc., Worcester, Mass., manufacturer of electrical riveting machinery, has been reincorporated with a capital of $500,000 and will move to Gardner, Mass., in order to expand its plant and engage in the manufacture of a wider line of machinery and machine tools. The company has obtained an option on a site in Gardner, which is served by a railroad siding, and plans to start at once to erect a factory. Frank P. Kobert is president and James A. Redemann treasurer.

* * *

MANUFACTURE of oil storage tanks and other arc welded steel plate products has been started by Emerson-Scheuring Tank Co. Indianapolis, recently incorporated. The company occupies a part of the plant of Burpee-Johnson Co., manufacturer of shock absorbers, on Singleton street. The company occupies about 6000 square feet of floor space and has placed about $10,000 worth of machinery and other equipment for electric arc welding purposes. W. J. Emerson is president; C. E. Scheuring, vice president and general manager, and M. R. Scheuring, secretary and treasurer.

* * *

L. H. JONES was re-elected president of the Detroit Copper & Brass Rolling Mills, Detroit, at the annual meeting of the stockholders held recently. Vice presidents R. P. Joy and A. H. Buhl were re-elected also as was A. J. Peoples, secretary and treasurer. Besides the officers, the following were re-elected to the board of directors: L. D. Buhl, F. J. Hecker, A. Henderson, F. H. Hoffman and H. D. Shelden. L. H. Jones was appointed general manager, F. H. Hoffman, assistant manager; W. P. Bache, assistant secretary and assistant treasurer, and A. Henderson, works manager.

* * *

H. K. FERGUSON was re-elected president of the H. K. Ferguson Co., Cleveland, engineer and builder, at the recent annual stockholders' meeting. H. S. Jacoby, associated with the company for six years, was elected vice president and will have charge of sales, as noted in IRON TRADE REVIEW, March 6. He formerly was chief engineer and secretary. W. M. Brown, formerly assistant secretary and comptroller has been elected secretary. J. S. Ruble, vice president in charge of construction was re-elected to that position. During his absence in Japan on work for the company Fred Swanson, general superintendent will be acting chief of construction. The board of directors selected at the meeting consists of H. K. Ferguson, J.

S. Ruble, H. S. Jacoby, W. M. Brown, L. A. Ferguson and E. F. Jacoby.

* * *

THE Fireproof Products Co. Inc., 356 East 133rd street, New York, has installed a plant for handling and cutting steel reinforcing bars. The plant is located at 130th street and Willow avenue, New York, where the company carries a stock of reinforcing bars in mill lengths.

* * *

J P. MESSIMORE was elected president of the Lincelin Machine Co., Minerva, O., at a recent meeting of the board. Fred Reisen was elected vice president and W. G. Kryder secretary and treasurer. In addition to the officers, Thomas Hughes, Canton and W. R. Kurtz, Minerva, are directors.

* * *

NO IMMEDIATE expansion is planned by the Peckham Brass Foundry, Inc., recently incorporated with $35,000 common and $15,000 preferred stock, to take over the business of F. W. Peckham, brass founder, 155 A street, Boston. Company manufactures brass, bronze, composition and aluminum castings, etc.

* * *

MANUFACTURE of radial type sand blast barrels formerly made by the Standard Equipment Co., New Haven, Conn., now will be the product of the Standard Radial Blast Corp., 30 Church street, New York. Charles S. Johnson, formerly sales manager of the Standard Equipment Co. now is general manager of the Standard Radial corporation.

* * *

DIRECTORS of Newton Steel Co., Newton Falls, O., were re-elected at the recent annual meeting as follows: E. F. Clark, J. H. Fitch Jr., H. A. Taylor, John W. Ford, George T. Filius, F. P. McIlyar and W. H. B. Ward. Officers re-elected were: E. F. Clark, president; J. H. Fitch Jr., vice president, R. A. Kennworthy Jr. secretary and treasurer and W. V. Eaton, assistant secretary and treasurer.

* * *

A NUMBER of changes in executive personnel of the Electric Controller & Mfg. Co., Cleveland, were made at the recent annual meeting. Claiborne Pirtle, formerly president of the company, was elected chairman of the board and H. F. Stratton, previously vice president and chief engineer, was elected president. F. R. Fishback just elected vice president and secretary, was sales engineer, and P. G. Clark, just elected vice president and treasurer, formerly was secretary and treasurer. R. G. Widdows appointed sales manager, was manager of the New York office. D. C. Wright was selected as chief engineer.

* * *

PAUL G. LEONI, A. T. O'Connell and E. L. Hamman have incorporated under the name of William H. Muller & Co., Inc., San Francisco, with a capital of $100,000. Mr. Leoni is president of the Iron & Ore Corp. of America with offices at 11 Broadway, New York. The new company will engage in the business of selling foreign iron and steel products on the Pacific Coast. Offices have been opened in the Oceanic building, 2 Pine street. Thos. W. Simmons, formerly of Thos. W. Simmons & Co., of San Francisco, has been elected vice president. A. Lichtenstein, formerly connected with the New York office of the Iron & Ore Corp. of America, has been transferred to San Francisco and has been appointed manager.

JOSEPH E. VINCENT JR.
Recently reappointed eastern sales manager of Pcerless Drawn Steel Co., Massillon, O.

India Buys in Germany

London, March 1.—The Indian government has let a contract for 3000 freight cars to a prominent German builder at a price 25 per cent below those bid by British or Indian car builders. This follows the award of a number of locomotives to a German builder and of 1500 tons of locomotive tires to Krupp by the Indian government.

Second Foundry Added

Property at 1007 South Third street has been leased by the Menzel & Jeffery Co., Minneapolis, to be used as a foundry for the production of sash weights, elevator weights, post mauls and similar products. The main foundry at 900 Fourth street, south, is to be confined to the production of machinery castings. This is perhaps the oldest foundry organization in the Northwest. Gregor Menzel in 1874 started a foundry in Minneapolis under the name of G. Menzel & Co. In 1893 he retired and his son, Charles G. Menzel, continued the business as the Menzel Foundry Co. In 1898 J. A. Jeffery came into the company which took the name of the Menzel & Jeffery Co. and in 1919 Charles G. Menzel retired, disposing of his interest to J. Frederick Quest. J. A. Jeffery is president of the company, Mr. Quest, secretary-treasurer and Thomas Mulcahy vice president and superintendent. The latter has been superintendent of the foundry 30 years.

Men of Industry

(*Continued from Page 746*)

brass and steel hinges and metal stampings, formerly was associated with the Joseph N. Smith Co., Detroit. Mr. Light will specialize on the sale of the Root company's automotive products.

* * *

Robert W. Coats, former superintendent for the Sharpsville Furnace Co., has accepted a like position with the Toledo Furnace Co., Toledo, O., effective as of March 1.

* * *

Edwin K. Smith recently made research engineer for Stockham Pipe & Fittings Co., Birmingham, Ala., for the past several years has been metallurgist and later superintendent for Wisconsin Malleable Iron Co., Milwaukee.

* * *

Charles S. Johnson, recently made general manager of the Standard Radial Blast Corp., 30 Church street, New York, formerly was sales manager for the Standard Equipment Co., New Haven, Conn.

* * *

C. J. Priebe, recently connected with the sales organization of Keller Mechanical Engineering Corp., Brooklyn, N. Y., formerly was associated with the *American Machinist* in an editorial and advertising capacity.

* * *

L. A. Hull, recently connected with the sales department of the International Oxygen Co., Newark, N. J., formerly had been connected for many years with other manufacturers in the oxygen industry.

* * *

George W. Ray, recently was appointed sales manager in the Detroit district for Union Drawn Steel Co., Beaver Falls, Pa. Mr. Ray will have his headquarters at the company's warehouse, 237 Jos Campau avenue.

Machinery Inquiries Maintained

Buyers Continue To Enter Market for Equipment but Hesitate To Close—Standard Sanitary Mfg. Co. Purchases More Than 22 Tools—General Electric Co. Brings Out Inquiry for 15 Machines—Southern Railway Places 11 Cranes

MACHINE tool buying gained impetus last week in the closing of several larger lots of equipment which had been pending for some time. The Standard Sanitary Mfg. Co., closed on more than 22 machines for its plant at Baltimore. A textile machinery manufacturer bought five tools and a Michigan automotive producer purchased nine machines.

Inquiry continues to come out in good volume but hesitation, prevalent for the past several weeks, has prevented quick action in closing. Railroads continue to extend their equipment lists, the Santa Fe inquiring for 23 and the New York Central for six. Industrial demand is limited largely to a few companies, the General Electric Co. and the Westinghouse Electric & Mfg. Co. being among the leading buyers. The General Electric Co., together with recent inquiries of from 12 to 15 machines for installation at Schenectady, N. Y., now has a list out comprising more than 125 tools. Several eastern railroads are reported as feeling out the market although few definite inquiries have resulted.

Secondhand equipment buying is spotty with some dealers reporting unusually good business, although the general demand is but fair. Inquiries are confined to small tools, few large machines being sought.

Crane buying last week was featured by the award of 11 electric traveling cranes by the Southern railway and six miscellaneous cranes by the Western Electric Co. Westinghouse Electric & Mfg. Co. placed eight traveling cranes with the Cyclops Iron Works for the Westinghouse plant at Emeryville, Cal. Inquiries for cranes from railroads continue to feature the demand although industrial companies are entering the market for a greater quantity.

Railroads Again Add To Extensive Lists

NEW YORK, March 11.—Industrial equipment demand is spotty, but the railroad field continues to hold much promise for machine tool builders. Freight car buying last month was close to the largest in several years, involving more than 41,000 cars, while buying of locomotives and track accessories also has been on a considerably improved scale. An interesting contract for work of this latter class was recently placed by the New York Central, calling for train control apparatus for five roads and divided among several manufacturers. This business, with the additional work still in sight, is believed certain to be reflected by increased buying of machine tools over the next few weeks.

At the same time, the railroads themselves are likely to be more active in the machinery market. The Southern railroad is expected to clean up its list shortly, and while the New York Central probably will act more slowly, its buying appears likely to involve a substantial number of machines over the next month or so.

Two or three other eastern railroads are understood to be feeling out the market although little in the way of bona fied inquiries has yet developed. A 42-inch car wheel borer has been placed by the Sugar Pine Lumber Co. through the San Francisco offices of an eastern builder.

Usually active in the market, the General Electric Co., Schenectady, N. Y., has considerably augmented its inquiries and also has purchased several machines. It now is bringing out its second list for its proposed West Philadelphia plant, including largely semispecial machines, such as grinders and small tools. It also has just brought out a list of possibly 12 or 15 machines for Schenectady, mostly for tool room installation. The list is made up chiefly of grinders.

Considering the equipment now pending for all of its various plants, more than 125 machines are listed. Its recent purchases have included four lathes for Schenectady, and at least one for Bloomfield, N. J. Action is expected shortly in placing two radial drills and two lathes for Pittsfield, Mass.

The crane market the past week was featured by the placing of 11 electric overhead cranes by the Southern railroad and six cranes, including one hand-power crane, by the Western Electric Co.

New England More Cheerful

BOSTON, March 11.—Sales last week were far from heavy, but a more cheerful note is apparent among machine tool dealers. A Massachusetts paper mill bought several tools including a $3000 lathe. A textile machinery manufacturer bought five small tools. Eucouraging inquiry for machine tools comes from this general line of user. The General Electric Co. bought several more tools for its Lynn, Mass., works and the Mead Morrison Co., East Boston, has closed on some additional used tools against its long list. Some inquiry is reported from railroadand from new scheels, but both of these sources are uncertain as to time of buying. Prices hold firm despite the moderate buying. New England machine tool manufacturers are operating at about 60 per cent of capacity with manufacturers of small tools in particular reporting an increase in business since the first of February.

Santa Fe Adds to List

CHICAGO, March 11.—The Atchison Topeka & Santa Fe railroad continues to add to its inquiry for machine tools, this week inviting proposals on one locomotive guide grinder, four double dry and two double wet grinders, one 32-inch x 12-foot engine lathe, one 4000-pound double frame steam hammer, one 20-inch x 12-foot geared head engine lathe, one milling machine, two vertical drill presses, one 100-inch boring mill, four-spindle radial drill press, one 6-foot radial drill, one 20-inch upright sensitive drill press and three portable lathes—one 16-inch x 6-foot and two 14-inch x 6-foot. The board of education of Chicago has closed bids on two 4-inch bench planers, motor-driven, with three extra set of knives, one bench trimmer, two sets planer knives for single surfacer, one oil stone tool grinder and one band saw. The Cincinnati, Indianapolis & Western railroad is inquiring for one hydraulic wheel press. Day-to-day business with Chicago machinery houses is not large, yet the daily average has put March on the road to being a better month than February, which in turn exceeded Jan. uary. Several deals for good sized planers are about to be closed. A Chi-

cago manufacturer has closed for a large milling machine.

Buyers Hesitate To Close

CLEVELAND, March 11.—Inquiries for machine tools and equipment continue to come out in good volume but buyers hesitate to close. Consequently the pending business is growing steadily and orders in the next month or two should show a good gain.

Purchases last week were confined to single tool lots with the exception of several sales. One manufacturer reports sale of nine tools to a Michigan automotive manufacturer while another sold four machines to an Ohio producer. The New York Central has added to its pending list with six tools.

Secondhand equipment buying is spotty with the demand generally good. One dealer sold a large slab miller to an Illinois company while others sold drills, a lathe and smaller machinery.

Hesitancy characterizes the crane market at present with buyers taking a long time to close on their requirements. Inquiries continue to be brought out in good quantity.

Larger Buying Develops

PITTSBURGH, March 11.—Awarding most of its machine tool list on a lump sum bid by the Standard Sanitary Mfg. Co., for its new plant at Baltimore, Md., to the Niles-Bement-Pond Co., comprising 22 items or more, constitutes the major development of the last week's machine tool market. About 10 woodworking machines are to be let this week. Six cranes went to one Milwaukee builder and one to the Chesapeake Iron Works.

The Westinghouse Electric & Mfg. Co., wants four or five items for East Pittsburgh, Pa., two or three for Homewood and more for other plants, but action probably will be deferred until its second quarter appropriation becomes available. A crane inquiry calling for 12 cranes from 3 to 75-ton capacity came out this week for that company. The Westinghouse Airbrake Co., Wilmerding, Pa., is expected shortly to issue a combined foundry equipment, machine tool and crane list for its new addition.

March Sales Increasing

CINCINNATI, March 11.—Sales of machine tools during the first 10 days of this month have been at a rate slightly in excess of that during the same period of February. Business closed has been small.

Crane Awards and Inquiries of the Week

Orders Placed

Six 5-ton special construction cranes for the new foundry at Baltimore, Md., of the Standard Sanitary Mfg. Co., Pittsburgh, awarded to the Pawling & Harnishfeger Co.

One 5-ton standard crane for the machine shop at Baltimore of the Standard Sanitary Mfg. Co., Pittsburgh, to the Chesapeake Iron Works.

One 15-ton, four-motor crane with 5-ton auxiliary and 57-foot, 10-inch span for the Buick Motor Co., Flint, Mich., to the Whiting Corp.

One 25-ton locomotive crane ordered by Stevens & Wood of New York, in charge of erecting the new power plant at Toronto, O., for the Ohio River Power Co., through Ridenour, Seaver & Kendig, Pittsburgh, to the Industrial Works.

One 15-ton electric traveling crane for the American Sheet & Tin Plate Co., McKeesport, Pa., Woods works, to the Whiting Corp.

One 2-ton crane with 12-foot span for the Sharpsville Boiler Works, Sharpsville, Pa., to the Alfred Box & Co., Inc.

One 30-ton locomotive crane for a Chicago concern, to Industrial Works.

One 15-ton locomotive crane for the Worthington Pump & Machinery Corp., 115 Broadway, New York, to the American Hoist & Derrick Co.

One used 20-ton locomotive crane, 50-foot boom, for the Lehigh Structural Steel Co., Allentown, Pa., for operation at Roanoke, Va., to Philip T. King, 30 Church street, New York.

One used 20-ton locomotive crane for the Lynchburg Foundry Co., Lynchburg, Va., to unnamed seller.

One gantry crane for Boyce Thompson Research Plants, Inc., Yonkers, N. Y., through J. G. White Engineering Corp., New York, to Bedford Foundry & Machine Co.; the crane is to span greenhouse No. 3, and is to carry lights understood to be designed by the General Electric Co. to do the work of sunlight in assisting the development of hothouse plants; this is possibly the first practical application of a crane to this work.

Two 10-ton, 4-motor cranes, 40-foot span, through the American Smelting & Refining Co., 120 Broadway, New York, for its subsidiary, Federal Head Co., to the Milwaukee Electric Crane & Mfg. Co.

One 20-ton electric crane, 55-foot span, for the Frog & Switch Mfg. Co., Carlisle, Pa., to an eastern builder.

One 15-ton, 4-motor crane, 58-foot span, for the Buick Motor Co., Flint, Mich., to the Whiting Corp.

One 10-ton overhead crane, for the New Haven Trap Rock Co., New Haven, Conn., to the Whiting Corp.

Two electric gate hoists with 40,000 pounds capacity for the Phoenix Utility Co., 61 Broadway, New York, to the Whiting Corp.

One 15-ton electric jib crane, for the American Steel & Tin Plate Co., Pittsburgh, to the Whiting Corp.

Eleven electric overhead cranes for the Birmingham, Ala., shops of the Southern railroad, to Pawling & Harnischfeger Co.; specifications call for one 150-ton double trolley crane, 77-foot, 5-inch span; two 20-ton, 38-foot, 7-inch span, and one 20-ton, 58-foot span; two 15-ton cranes, 71-foot span; two 15-ton, 56-foot, 6-inch span, two 15-ton, 24-foot span.

Six overhead cranes for the Kearny, N. J. plant of the Western Electric Co., to the Shaw Electric Crane & Mfg. Co.; specifications call for one 30-ton, 10-ton auxiliary, 42-foot, 6-inch span; one 20-ton, 5-ton auxiliary, 20-foot span; one 25-ton, 5-ton auxiliary, 29-foot, 6-inch span; two 5-ton, 46-foot span; and one 5-ton handpower crane.

Complete coal handling plant for the Ohio River Edison Co., Toronto, O., through Stevens & Wood, Inc., 120 Broadway, New York, to Heyl & Patterson, Inc.; and one 22½-ton locomotive crane, placed in Ohio, with Industrial Works.

One 17½-ton locomotive crane for a Cleveland company, to Industrial Works.

One 30-ton locomotive crane for the Great Northern Equipment Co., Seattle, to Industrial Works.

One 100-ton overhead traveling crane for Southern California Edison Co., Los Angeles, to Shaw Electric Crane Co.

One 25-ton locomotive crane for Blodell, Donovan Co., Bellingham, Wash., to Ohio Locomotive Crane Co.

One 25-ton locomotive crane for Pacific States Lumber Co., Tacoma, Wash., to Ohio Locomotive Crane Co.

One 4-yard bucket 80-foot span grab bucket crane for Superior Portland Cement Co., Concrete, Wash., to Shepard Electric Crane & Hoist Co.

One 5-ton traveling crane for Washington Iron Works, Seattle, to Pratt & Whitney.

One 10-ton traveling crane for Palm Iron Works, Sacramento, Cal., to Union Iron Works.

One 5-ton traveling crane for Palm Iron Works, Sacramento, Cal., to Stamp Electric Hoist Co.

One 10-ton and seven 2-ton overhead traveling cranes for Westinghouse Electric & Mfg. Co., Emeryville, Cal., to Cyclops Iron Works.

One 3-ton, 2-motor monorail for Anderson-Barngrover Co., San Jose, Cal., to Union Machine Works.

Two 5-ton handpower hoists for Market street railway, San Francisco, to Stamp Electric Hoist Co.

One 12½-ton traveling grab bucket crane for Pacific Portland Cement Co., at Redwood City, Cal., trolley to Pawling & Harnischfeger, Co., bucket, 4-yard, to Brown Hoisting Machinery Co. and 250 tons of crane runways to Kyle & Co.

One 20-ton crane for a scrap dealer in Chicago, to McMyler-Interstate Co.

One 10-ton gasoline operated crane for a scrap dealer in Boston, to McMyler-Interstate Co.

One 25-ton locomotive crane for a contracting company in St. Louis, to McMyler-Interstate Co.

One ½-ton hoist for Gay Engineering Co., San Francisco to Stamp Electric Hoist Co.

One ½-ton hoist for Webster Mfg. Co., Los Angeles to Stamp Electric Hoist Co.

Two ½-ton hoists for National Ice & Cold Storage Co., San Jose, Cal., to Stamp Electric Hoist Co.

One 1-ton hoist for National Ice & Cold Storage Co., Oakland, Cal., to Stamp Electric Hoist Co.

One 1-ton hoist for Salinas Valley Ice Co., Salinas, Cal., to Stamp Electric Hoist Co.

One 5-ton electric traveling crane for Bethlehem Steel Corp., Bethlehem, Pa., to Whiting Corp.

One 15-ton electric job crane for American Sheet & Tin Plate Co., Pittsburgh, to Whiting Corp.

One 15-ton electric traveling crane for Buick Motor Co., Flint, Mich., to Whiting Corp.

Orders Pending

Twelve cranes for the Westinghouse Electric & Mfg. Co., Sharon, Pa., including one each 75, 50 and 30-ton capacity; four 15-ton, three 5-ton, and two 3-ton; bids being tabulated.

One soaking pit crane for the Allegheny Steel Co., Brackenridge, Pa., bids being taken.

Cranes for the tube mill at Gary, Ind., of the National Tube Co.; inquiry again active.

Cranes for the Carnegie Steel Co., Jones & Laughlin Steel Corp., and other steel companies in the Pittsburgh district; buying deferred for the present.

Two 5-ton cranes for Westinghouse Electric & Mfg. Co., East Pittsburgh; bids in.

Several traveling cranes for the Mt. Vernon Car Mfg. Co., Mt. Vernon, Ill., contemplated for a proposed extension; contracts for which have been placed.

One 10-ton electric crane, 50-foot span, for the Hull Iron & Steel Foundries Ltd., Hull, Quebec, for a proposed foundry, near Odgensburg, N. Y.

One used 15 or 20-ton crane, with five or 10-ton auxiliary and 50-foot span, for the Worthington Pump & Machinery Corp., 115 Broadway, New York, for its Laidlaw works, Elmwood, O.; bids asked.

One 10-ton electrically operated crawler crane for the Commonwealth Quarry Co., Morristown, N. J., for its quarry at East Summit, N. J.

Two locomotive cranes, of 12½ and 15 tons capacity, respectively, for the Atlantic Coast Line; bids asked.

One 10-ton electric crane, 27-foot, 7-inch span, either new or used, for the De La Vergne Machine Co., foot of East 138th street, New York; bids asked.

One 200-ton locomotive hoist, with alternative of 200-ton electric traveling crane, by Cincinnati, Indianapolis & Western railroad; H. Lewis, purchasing agent, Indianapolis.

One 20-ton locomotive crane for Service Rock Co., Fresno, Cal.; no action taken yet.

One 10-ton overhead traveling crane for Marchant's Foundry, Oakland, Cal; bids in soon.

One 25-ton overhead traveling crane for Pacific Gas & Electric Co., San Francisco; bids in.

One 20-ton locomotive crane for Santa Fe tie treating plant at Albuquerque, N. Mex., bids being taken at Chicago.

Two 10-ton traveling cranes for Clover Valley Lumber Co., Loyalton, Cal.; pending.

Recent Industrial Business Changes

THE executive and sales offices of the various subsidiaries of the Steel Corporation in Cleveland now are being centralized in the Rockefeller building. Offices of the American Steel & Wire Co., which were in the Western Reserve building, now occupy the twelfth and thirteenth floors of the Rockefeller building. The Pittsburgh Steamship Co. has taken the sixteenth floor, the Carnegie Steel Co., and associated companies the fourteenth floor and the American Bridge Co. and the American Sheet & Tin Plate Co., locations on the fourteenth floor. The Carnegie Steel Co. offices formerly were located on the seventh floor. Under these changes, the Steel corporation subsidiaries now occupy the upper five floors.

* * *

M. D. Larkin Corp., Dayton, O., has taken over the control of Dayton Iron & Steel Co., that city.

* * *

Aetna Aluminum & Brass Casting Co., Chicago, has been dissolved.

* * *

Richards & Co., dealer in metals, has moved from 200 Causeway street, to 277 Commercial street, Boston.

* * *

Motor City Stamping Co., Hart avenue, Detroit, has purchased the Michigan Pressed Steel Co., 126 South Artillery avenue, that city.

* * *

The Crescent Fuel & Supply Co., 318-38 Huffman Ave., Dayton, O., has been named district agent for the Concrete Steel Co., New York.

* * *

The McMyler-Interstate Co., Cleveland, has moved its branch office in Chicago to larger quarters at 648 Railway Exchange building.

* * *

Standard Steel & Wire Co. has removed its general office from 549 West Washington boulevard to 1408 Cortland street, Chicago.

* * *

Sullivan Machinery Co., Chicago, has removed its office in Birmingham, Ala., from Brown Marx building, to 2108 Fifth avenue north. G. P. Small is manager.

* * *

C. G. Spring Co., Kalamazoo, Mich., has changed its name to C. G. Spring & Bumper Co., in addition to increasing the capital stock from $2,500,000 to $16,000,000.

* * *

The Poldi Steel Corp. of America, 151 Bank street, New York, has opened a branch office in Otis building, Philadelphia, in charge of T. J. McAndrew, formerly the Baltimore district sales agent.

* * *

Pittsburgh Crucible Steel Co., Pittsburgh, has removed its Detroit office from 1124 Penobscot building to 4-155 General Motors building. J. N. Critchlow is district sales manager.

* * *

The John H. McGowan Co., Cincinnati, manufacturer of steam and power driven machinery for all purposes has purchased the Twinvolute Pump & Mfg. Co., Newark, N. J., builder of centrifugal pumps.

* * *

The Liberty Brass & Bronze Foundry, San Francisco, has moved its offices and plant from 248 Tehama street to Sherman and Cleveland streets.

* * *

The Dillon Bros. Machine Co., Bridgeport, O., has taken over the partnership formerly operated as Dillon Bros. Co. Company does general machine shop and repair business.

* * *

The Truscon Steel Co., Youngstown, has leased a 3-story building at Erie and St. Clair streets, Chicago, where the Chicago district offices will be moved on May 1. Peter M. Louwerse, is Chicago district manager.

* * *

The Standard Welding Co., plant of the Standard Parts Co., Cleveland, is to be sold March 15 to Andrew Squire of Squire, Sanders & Dempsey, attorney, subject to court order. Stated consideration is $550,000.

* * *

The Stocker-Rumely-Wachs Co. will handle the plain, universal and vertical milling machines manufactured by the Garvin Machine Co., New York, in the Chicago, Milwaukee and Grand Rapids, Mich., territory.

* * *

The Pitts & Kitts Mfg. & Supply Co., 342 Madison avenue, New York, has been appointed metropolitan representative of the Glauber Brass Mfg. Co., Cleveland, maker of high grade plumbing supplies and specialties.

* * *

United Alloy Steel Corp., Canton, O., has opened an office in Syracuse, N. Y., at 402 Keith Theater building, South Salina street, in charge of F. W. Krebs, district sales agent. He will be assisted by I. J. Shults and F. C. Flood.

* * *

American Rim Corp., Danvers, Mass., recently purchased the plant and assets of the C. K. Seymour Corp., also at Danvers, for approximately $150,000. The American Rim Corp. was recently organized for $800,000 to manufacture rims and automobile accessories.

* * *

The National Cast Iron Pipe Co. has transferred its Pacific coast headquarters from Los Angeles to San Francisco and offices have been opened in the new Matson building. The Los Angeles office is to be closed. B. L. Hendershot, formerly sales manager at Dallas, Tex., will be in charge of the office.

* * *

Newton Morris has taken over the share of his brother, Oscar, in the Morris Bros. Foundry, Fond Du Lac., Wis. and will operate the shop under the name of Morris Foundry. A new 42 x 72 foundry addition and fireproof pattern storage vault have been completed.

* * *

The Cannon-Stein Steel Corp., Syracuse, N. Y., steel specialists in high grade tool, alloy, high speed steels, has taken a long term lease on the ground floor of the building at Marcellus and Wyoming streets from Syracuse Chilled Plow Co. New quarters are to be fitted up for occupancy about April 15. Large warehousing facilities will enable company to expand business.

* * *

William L. Hoffman has moved his headquarters from the Land Title building to 1504 West Venango street, Philadelphia. Mr. Hoffman represents in the Philadelphia territory the Mansfield Sheet & Tin Plate Co.; Ashtabula Steel Sheet Co.; J. W. Brainard Steel Co.; and S. Severance Mfg. Co.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

ANNISTON, ALA.—Anniston Foundry Co., William H. Deyor, secretary and manager, has let contract to Ogletree Construction Co. to erect a 40 x 60-foot, a 30 x 90-foot and a 25 x 280-foot building. Estimated cost is $20,000. Equipment to be purchased includes planers, lathes, shapers, drill press and tapping machines, most of which are ordered. *Noted Feb.* 28.

BIRMINGHAM, ALA.—United States Cast Iron Pipe & Foundry Co. was damaged by fire recently at its North Birmingham plant.

FORT SMITH, ARK.—Yaffe-Boal Machinery Co. has been incorporated for $10,000 by D. M. Boal, president, Simon Yaffe, Rae Yaffe and Lillian E. Boal. Company will do a general repairing and welding business.

BERKELEY, CAL.—The Berkeley Brass Foundry Co. has been incorporated at 2629 Seventh street, to make brass and aluminum castings. Walter Eggers is manager.

LOS ANGELES—Union Pacific railroad plans constructing addition to engine terminal at East Yard, at an estimated cost of $150,000. Plant is to consist of 1-story shop building, 40 x 300 feet, shop building 40 x 100 feet, and an 11-stall roundhouse.

OAKLAND, CAL.—The New Metal Products Co., San Francisco, headed by Howard Spreckels, will construct plant here. Company manufactures range boilers and other sheet metal products.

OAKLAND, CAL.—The Oakland Furnace & Foundry Co. has been incorporated for $100,000 by John E. Hyatt, John Newman and F. L. Holbrook. The foundry formerly used by the Fageol Motor Co., at Fourth street and Bancroft way, Berkeley, has been taken over and the company is making castings for its furnaces.

ORANGE, CAL.—California Wire Co. is adding to its plant a $10,000 factory unit increasing floor space 7000 square feet. Construction is under way.

BRIDGEPORT, CONN.—The Special Machinery Co., Inc., has been organized with James W. Grant as president, Lucy Murphy of Fairfield as vice president and Sarah E. Walsh of Bridgeport as secretary and treasurer.

GEORGETOWN, CONN.—Gilbert & Bennett Co. will construct 3-story, 135 x 150-foot wire mill here.

MILFORD, CONN.—The Sanford Steel Corp. has been incorporated for $226,000 by Arthur J. Scepters, Frank C. Minnix and Henry H. Bentley.

MIAMI, FLA.—Seminole Bed Spring Mfg. Co. has plans for remodeling and expanding plant. S. Dubbin, 2027 North Miami avenue, is president.

ATLANTA, GA.—Hec Mfg. Co. has been reorganized and will purchase considerable equipment for expansion program. Purchases will include shearing, drilling, bending and punching machines for sheet metal work. Offices are at 1205 Fourth National Bank building.

ATLANTA, GA.—The Koehring Machine Co., Milwaukee, plans expanding its southern facilities. Principal distributing point in South is at 24-6 Stewart avenue. Company builds concrete mixing and other roadmaking machinery.

BLEND, ILL.—Iron Ore Co. has been incorporated for $250,000 to mine and concentrate ore, erect buildings and machinery by F. F. Jorgenson, Peter Sciarra, Willard C. Killen, Edward Neuman and James D. Rolando, with A. A. Hunt, East St. Louis, as correspondent.

CHICAGO—Greenduck Metal Stamp Co., 2129 Tilden avenue, was damaged by fire recently with heavy loss.

CHICAGO—D. H. Burnham & Co., 105 West Monroe street, is architect for a factory and warehouse to be built at Western avenue and Forty-seventh street for Electric Storage Battery Co., Philadelphia, at an estimated cost of $250,000.

CHICAGO—The Illinois Power & Light Corp., 232 South Clark street, is having plans prepared for a $50,000 water gas plant at La Salle, Ill.

CHICAGO—Republic Flow Meters Co., 2240 Diversey parkway, has awarded contract for 2-story, $31,500 addition to Carpenter, Hayes & Co., 109 North Dearborn street. *Noted Feb.* 21.

CHICAGO—Chicago Wire & Steel Co., Torrence avenue and East 103rd street, has awarded contract to R. & G. Construction Co., 6425 South Park avenue, for $80,000 plant addition.

CHICAGO—Detroit Copper & Brass Rolling Mills plans $100,000, 2-story, 50 x 170-foot warehouse and office. Robert H. Adams, 111 North Jefferson street, is Chicago agent.

CHICAGO—The Atlantic Wire & Iron Co. plans $30,000, 3-story, brick factory addition at 1635 Fulton street. David Worchore, 1638 Fulton street, is manager.

CHICAGO—Frank M. Lotridge Co., 361 West Superior street, has been incorporated for $10,000 to manufacture and deal in tools, equipment and accessories for automobiles, by Frank C. Rogers, 11 South La Salle street.

CHICAGO—Bids are being received by Erich J. Patelski, 157 West Randolph street, for remodeling the north side natatorium and installing pumps, filters and similar equipment at a cost of about $100,000.

CHICAGO—Acme Steel Goods Co. plans $10,000 addition to factory. James E. McMurray, 2834 Archer avenue, is president. George C. Nommons Co., 122 South Michigan avenue, is architect and engineer.

CHICAGO—Northern States Power Co., 208 South La Salle street, plans dam and power house with 40,000-horsepower capacity, and a smaller plant on St. Croix river costing about $3,000,000.

CHICAGO—Damez Foundry Co., 7380 South Chicago avenue, has been incorporated for $25,000 to manufacture and deal in iron, metal, castings, etc., by William B. Gemmill, D. Canavan and Ernest R. Reichmann.

CHICAGO—Mutual Metal Mfg. Co., 4832 West Division street, has been incorporated for $24,900 to manufacture and deal in electric lighting fixtures and equipment, by Henry Goodfriend, William Christensen and William J. Tanney.

CHICAGO—Taylor Washing Machine Co., 430 North Parkside avenue, has been incorporated for $75,000 to manufacture and sell washing machines, vacuum cleaners, ironing machines, etc., by Sherwood V. Hinman, Ellis R. Taylor and William F. Rapelje.

CHICAGO—General Automotive Mfg. Co., 625 West Jackson boulevard, has been incorporated to engage in general manufacturing of engines, machinery, metal specialties, etc., by Harry S. Pardee, Charles A. Pardee and Charles F. McElroy.

CHICAGO—Wolff Mfg. Co., 253 North Hoyne street, has awarded The Austin Co., 208 South La Salle street, contract for constructing brick and steel enameling plant costing about

Tool Exports Drop Off

DOMESTIC exports of lathes and other metalworking machinery from the United States in December, again showed a decrease, valuation of the classifications below being far under November's figures. Total valuation of shipments in December was $177,165 as compared with $282,929 in November and $416,311 in October. Following is a list of exports by countries:

Countries	Lathes dollars	Boring and drilling mach'y dollars	Planers, shapers and slotters dollars	Milling mach's dollars
Belgium	.....	.....	.....	2,025
France	6,762	2,212	.....	2,063
Hungary	5,565	.....	.....	.....
Italy	.....	3,521	.....	.....
Spain	.....	454	.....	.....
Sweden	3,979	.....	.....	680
England	2,287	193	2,495	5,967
Canada—Maritime provinces	.....	317	.....	.....
Quebec and Ontario	14,008	16,392	.....	1,391
British Col. and Yukon	.....	321	.....	.....
Costa Rica	.....	283	.....	.....
Honduras	810	.....	.....	.....
Nicaragua	503	53	.....	.....
Panama	3,090	200	.....	.....
Mexico	535	535	.....	.....
N'f'd'd and Labrador	.....	161	.....	.....
Barbados	247	.....	.....	.....
Cuba	2,630	329	.....	.....
Argentina	.....	23	.....	.....
Brazil	1,317	.....	.....	.....
Chile	20,792	6,400	.....	.....
Colombia	3,135	521	.....	.....
Venezuela	.....	.....	245	.....
British India	811	953	.....	.....
Ceylon	319	.....	.....	.....
Chosen	4,270	.....	.....	.....
Japan	10,791	21,105	1,222	18,876
Australia	48	2,073	.....	2,895
New Zealand	636	881	.....	.....
British South Africa	.....	244	.....	.....
Total	$82,535	$56,771	$3,962	$33,897

$100,000 and also remodeling warehouse for use as brass foundry and light machine shop.

DECATUR, ILL.—Fire on Feb. 26 badly damaged the coach shops, storehouse, offices and 18 coaches of the Wabash railroad. The railroad expects to rebuild the plant immediately.

JOLIET, ILL.—Robert Meers Hardware Co., 203-5 East Jefferson street, has been incorporated for $100,000 to deal in hardware and supplies, by Robert Meers, M. T. A. Kelly and William P. Gahan.

ROCKFORD, ILL.—Rockford Brass Works, 710 South Main street, will occupy a 6-story factory and warehouse to be built at 650 South Main street. Plant will house brass foundry of Rockford Brass Works and machine shops. Holm-Page Co. is general contractor.

EAST CHICAGO, IND.—American Steel Foundries has taken out permits for three buildings to cost about $75,000. Kenwood Bridge Co. will do the constructing.

INDIANAPOLIS—The Allied Magnet Wire Corp. has been incorporated with $20,000 preferred and 1000 shares no par value common stock, by Charles S. Tuttel, Cornell C. Vos and David W. Vos.

VALPARAISO, IND.—Pennsylvania railroad will rebuild its roundhouse and shops here which were damaged by fire on Jan. 17.

FORT MADISON, EMPORIA, KANS.—Atchison, Topeka & Santa Fe railroad plans constructing shop additions here.

OWENSBORO, KY.—United States Mail Box Co. has been incorporated for $300,000 by Haywood B. Maxey, J. Edward Hayden and others to manufacture mail boxes, etc.

BALTIMORE—Central Metal & Supply Co. has awarded contract for 90 x 108-foot 4-story reinforced concrete plant to William F. Chew & Co. Cranes and switching facilities will be provided. A 56 x 100-foot pipe shed will be erected in the rear.

BOSTON—Boston Consolidated Gas Co. has awarded contracts for a chemical laboratory at Everett, Mass.

DORCHESTER, MASS.—National Can Co. has awarded contracts for constructing manufacturing building and garage here.

JOPLIN, MO.—The Shafer-Leverett Boiler & Machinery Co. has acquired a site at Cox avenue and Fifth street, has taken over the Gus James Boiler Works and will erect a new plant of concrete block construction. Additional machinery will be installed. John L. Shafer is president.

ST. LOUIS—Superior Structural Steel Co. has been incorporated for $40,000 by W. N. Brown, 4006 Natural Bridge road, W. M. Schenler, 3633 Oakland avenue, and others.

ASBURY PARK, N. J.—Extensions to its power plant and lighting system, costing more than $350,000, will be made by Atlantic Coast Electric Light Co., recently acquired by Eastern New Jersey Power Co.

NEWARK, N. J.—Plans have been completed by Otto Brauz Co., Inc., manufacturer of plumbers' equipment, for erection of a 1 and 2-story building to replace structure recently damaged by fire.

ALBANY, N. Y.—Gilbert J. Scofield Co. has been incorporated for $30,000 to conduct general machine shop business, by G. J. Scofield, L. M. Benjamin and L. Maby, with Sanford & Alexander as attorney.

ASTORIA, N. Y.—Universal Car & Sales Corp. is taking bids on constructing 1 or 2-story, 100 x 130-foot plant. I. Kaufer, 434 Jackson avenue, Long Island City, is president.

AVON, LIVINGSTON CO., N. Y.—Wiley C. Clifford Corp. has been incorporated for $75,000 to manufacture tools and toys, by W. C. and O. L. Clifford and J. F. Kellogg,

(*Concluded on Page 760*)

Warehouse Steel Prices

Quotations at Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.515c
Buffalo	3.55c
Chicago	3.20c
Cincinnati	3.40c to 3.50c
Cleveland	3.36c
Detroit	3.35c
Los Angeles	3.75c
New York	3.54c
Philadelphia	3.47c
Pittsburgh	3.15c
San Francisco	3.75c
Seattle	3.50c
St. Louis	3.35c
St. Paul	3.45c

IRON BARS

Boston	3.515c
Buffalo	3.50c
Chicago	3.20c
Cincinnati	3.40c to 3.50c
Detroit	3.35c
New York	3.54c
Philadelphia	3.47c
St. Louis	3.35c

SHAPES, STRUCTURAL

Boston	3.615c
Buffalo	3.65c
Chicago	3.30c
Cincinnati	3.50c to 3.60c
Cleveland	3.46c
Detroit	3.45c
Los Angeles	3.85c
New York	3.64c
Philadelphia	3.57c
Pittsburgh	3.25c
San Francisco	3.60c
Seattle (large shapes)	3.60c
St. Louis	3.45c
St. Paul	3.55c

PLATES

Boston	3.615c
Boston, 3/16-inch	3.04c
Buffalo	3.65c
Chicago	3.30c
Cincinnati	3.50c to 3.60c
Cleveland	3.46c
Detroit	3.45c
Detroit, 3/16-inch	3.45c
Los Angeles	4.00c
New York	3.64c
Philadelphia	3.57c
Philadelphia, 3/16-inch	3.82c
Pittsburgh	3.25c
San Francisco	3.75c
Seattle	3.50c
St. Louis	3.45c
St. Paul	3.55c

NO. 10 BLUE ANNEALED SHEETS

Boston, 3/16-inch	4.515c
Buffalo	4.30c
Chicago	4.00c
Cincinnati	4.10c
Cleveland	3.60c to 4.06c
Detroit	4.15c
Los Angeles	5.00c
New York	4.34c
Philadelphia	4.10c
San Francisco	5.00c
Seattle	5.00c
St. Louis	4.10c
St. Paul	4.25c

NO. 28 BLACK SHEETS

Boston	5.00c
Buffalo	5.00c
Chicago	4.70c
Cincinnati	4.90c
Cleveland	4.50c to 4.65c
Detroit	4.85c
Los Angeles	6.20c
Philadelphia	5.15c
New York	4.85c
San Francisco	5.80c
Seattle	6.00c
St. Louis	4.75c
St. Paul	4.95c

NO. 28 GALVANIZED SHEETS

Boston	6.00c
Buffalo	6.10c
Chicago	5.60c
Cincinnati	5.90c
Cleveland	5.60c to 5.80c
Detroit	6.00c
Los Angeles	7.00c
New York	5.85c
Philadelphia	6.25c
San Francisco	6.50c
Seattle	7.00c
St. Louis	5.75c
St. Paul	5.75c to 6.00c

BANDS

Boston	4.315c
Buffalo	4.35c
Chicago	3.95c
Cincinnati	4.00 to 4.10c
Cleveland	4.01c to 4.16c
Detroit	4.10c
Los Angeles	4.65c
New York	4.39c
Philadelphia	4.27c
Pittsburgh	3.95c
San Francisco	4.50c
Seattle	4.50c
St. Paul	4.20c

HOOPS

Boston	5.80c
Buffalo	4.65c
Chicago	4.55c
Cleveland	4.01c to 4.16c
Detroit	4.95c
New York	5.19c
Philadelphia, 1 inch and wider 20 gage and heavier	4.27c
Pittsburgh	3.95c
Seattle	5.50c
St. Paul	4.80c

COLD FINISHED STEEL

Boston (rounds)	4.35c
Boston (shapes)	4.85c
Buffalo (rounds)	4.45c
Buffalo (shapes)	4.95c
Chicago (rounds)	4.00c
Chicago (shapes)	4.50c
Cincinnati (rounds)	4.25c
Cincinnati (shapes)	4.75c
Cleveland (rounds)	4.10c
Cleveland (shapes)	4.60c
Detroit (rounds)	4.30c
Detroit (shapes)	4.80c
Los Angeles (rounds)	5.60c
New York (rounds)	4.40c
New York (shapes)	4.90c
Philadelphia (rounds)	4.35c
Philadelphia (shapes)	4.85c
Pittsburgh (rounds)	4.05c
Pittsburgh (sq. hex. and flats)	4.55c
San Francisco (rounds)	5.50c
Seattle (rounds)	5.00c
St. Paul (rounds)	4.25c

WELDED PIPE

Discounts from warehouse, New York City

Standard Steel Pipe

	Black	Galvanized
¼-⅜-inch butt	—31	+ 2
½-inch butt	—41	—24
¾-inch butt	—46	—32
1/3-inch butt	—48	—34
3½-6-inch lap	—44	—30
7-8-inch lap	—41	—11
9-10-inch lap	—35	— 8
11-12-inch lap	—34	— 6

Wrought Iron Pipe

	Black	Galvanized
¼-⅜-inch butt	+44	+78
½-inch butt	— 4	+19
¾-inch butt	—11	+ 9
1-1½-inch butt	—14	+ 6
2-inch lap	— 5	+14
3-6-inch lap	—11	+ 6
7-12-inch lap	— 3	+16

Bourne-Fuller Service

includes immediate shipment of all Iron and Steel materials from Cleveland and Cincinnati

Warehouses

If you are not receiving our Stock-list we shall be glad to send it to you regularly upon request.

Upson Works

Open Hearth Steel Bars for special uses. Also a complete line of Bolts and Nuts. Prompt Shipments.

THE
BOURNE-FULLER CO.
Iron, Steel
Pig Iron
Coke

CLEVELAND

New York **Chicago**
San Francisco
Cincinnati **Detroit**

Iron and Steel Prices

Iron Ore

LAKE SUPERIOR ORES
Per Gross Ton Lower Lake Ports

Old range bessemer, 55 per cent iron	$6.45
Mesabi bessemer, 55 per cent iron	6.20
Old Range nonbessemer, 51½ per cent iron	5.70
Mesabi nonbessemer, 51½ per cent iron	5.55

EASTERN LOCAL ORES
Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 53 to 63 per cent	10.00 to 11.00
Copper free low phosphorus 53 to 65 per cent	13.25 to 16.50

FOREIGN IRON ORE
Cents per unit, c.i.f. Atlantic ports

Spanish low phosphorus, 52 to 54 per cent	9.00 to 10.00
Algerian low phosphorus, 52 to 54 per cent	10.00 to 10.50
Swedish and Norwegian low phosphorus, 68 per cent	11.00 to 12.00
Swedish foundry or basic, 66 to 68 per cent	9.25 to 10.00
Spanish foundry or basic, 50 to 54 per cent	9.00

Manganese Ore

Prices do not include duty at rate 1 per cent per pound of metallic manganese contained.

Brazilian, minimum 47 per cent.....nominal 44 cents c.i.f. tidewater
Indian, minimum 47 per cent.....nominal 44 to 44½ cents c.i.f. tidewater
Caucasian, 53 to 55 per cent.....Unwashed, 42 cents, c.i.f. tidewater
.....Washed, 45 cents, c.i.f. tidewater

Fluor Spar

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$19.75 to 23.50
Washed gravel, imported, duty paid eastern tidewater, per gross ton	20.60 to 21.10

Rivets

Structural rivets, C. L. Pitts	2.75c
Structural rivets, L.C.L. Pitts	2.90c
Rivets, 7/16-in. and smaller	70 and 10 off

Nuts and Bolts

(Up to 1¼ and 1⅛ inches inclusive)

Hot pressed square or hexagon blank	$4.25 off list
Hot pressed square or hexagon tapped	$4.25 off list
Cold punched square or hexagon blank	$4.00 off list
Cold punched, square or hexagon	$4.00 off list
Cold punched semifinished hexagon nuts ⅝-inch and larger	75 and 5 off
Cold punched semifinished hexagon nuts 9/16-inch and smaller	80 and 5 off

Price f.o.b. Pittsburgh, packages of 50.

CARRIAGE BOLTS
(⅜ x 6 inches, smaller and shorter)

Rolled thread	60 and 5 off
Cut thread	50, 10 and 5 off
Larger and longer	50, 10 and 5 off

MACHINE BOLTS
(⅜ x 4 inches, hot pressed nuts)

Rolled thread	60, 10 and 5 off
Cut thread	60 and 5 off
Larger and longer	60 and 5 off

(⅜ x 4 inches, cold punched nuts)

Cut thread	50, 5 off
Larger and longer	50, 5 off
Lag screws	65 and 5 off
Plow bolts Nos. 1, 2 and 3 heads	50 and 10 off
4 to 10 heads	50-10 + 20 off
Flat and round head stove bolts	75, 10 and 5 off
Other stove bolts	75 and 5 off
Tap bolts	25 and 10 off
Bolt ends with hot pressed nuts	60 nd 5 off
Bolt ends with cold punched nuts	50 and 5 off
Blank bolts	60 and 10 off
Rough stud bolts with nuts	45 and 5 off

Washers

Wrought washers .....$5.00 to $5.50 off

Steel Pipe

(Effective April 19, 1923)
Pittsburgh basing discounts, jobbers' carloads.

	Black	Galvanized
Butt Weld		
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½
Lap Weld		
2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½
REAMED AND DRIFTED		
Butt Weld		
1 to 3-inch	60	48½
Lap Weld		
2-inch	53	41½
2½ to 6-inch	57	45½
EXTRA STRONG—PLAIN ENDS		
Butt Weld		
⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½
Lap Weld		
2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½
Lap Weld		
2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

Wrought Iron Pipe

(Effective Jan. 23, 1923)
Pittsburgh basing discounts, jobbers, carloads

	Black	Galvanized
THREADS AND COUPLINGS		
Butt Weld		
⅛ and ⅜-inch	+11	+39
½-inch	22	2
¾-inch	28	11
1 to 1½-inch	30	13
Lap Weld		
1¾ and 1½-inch	Upon application	
2-inch	23	7
2½ to 6-inch	26	11
3 to 6-inch	28	13
7 to 12-inch	26	11
PLUGGED AND REAMED		
Two points less than above		
EXTRA STRONG, PLAIN ENDS		
Butt Weld		
⅛ and ⅜-inch	+19	+54
½-inch	21	7
¾-inch	28	12
1 to 1½-inch	30	14
Lap Weld		
2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
9 to 12-inch	16	2
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39
Lap Weld		
2 and 2½-inch	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	

Boiler Tubes

L. C. L. discounts. C. L. 4 points larger

STEEL (Lap welded)
(Effective April 19, 1923)

2 and 2¼-inch	23 off
2½ and 2¾-inch	33 off
3-inch	36 off
3¼ to 3¾-inch	38½ off
4 to 13-inch	42 off

CHARCOAL IRON
(Effective April 12, 1923)

1½-inch	+22
1¾-inch	+12
2 and 2¼-inch	+ 2
2½ to 3-inch	3
3¼ to 4½-inch	5

SEAMLESS COLD DRAWN
(Effective April 19, 1923)

1-inch	51 off
1¼ and 1½-inch	43 off
1¾-inch	27 off
2 and 2¼-inch	18 off
2½ and 2¾-inch	28 off
3 and 3¼-inch	32 off
3½ and 3¾-inch	33 off
4-inch	37 off
4½ and 5-inch	29 off

SEAMLESS HOT ROLLED

3 and 3¼-inch	34 off
3½ and 3¾-inch	35 off
4-inch	39 off

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:
Add $8 per net ton for more than four gages heavier than standard and add 10 per cent to theoretical weight
Add 5 per cent for lengths over 24 feet and not over 26 feet.
Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.
Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING
Base Discounts

Carbon, 0.10 to 0.20 per cent	83 off
Carbon, 0.30 to 0.40 per cent	81 off
Carbon, 0.40 to 0.50 per cent	net price

Plus differentials and extras for cutting.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES
(Effective April 19, 1923)

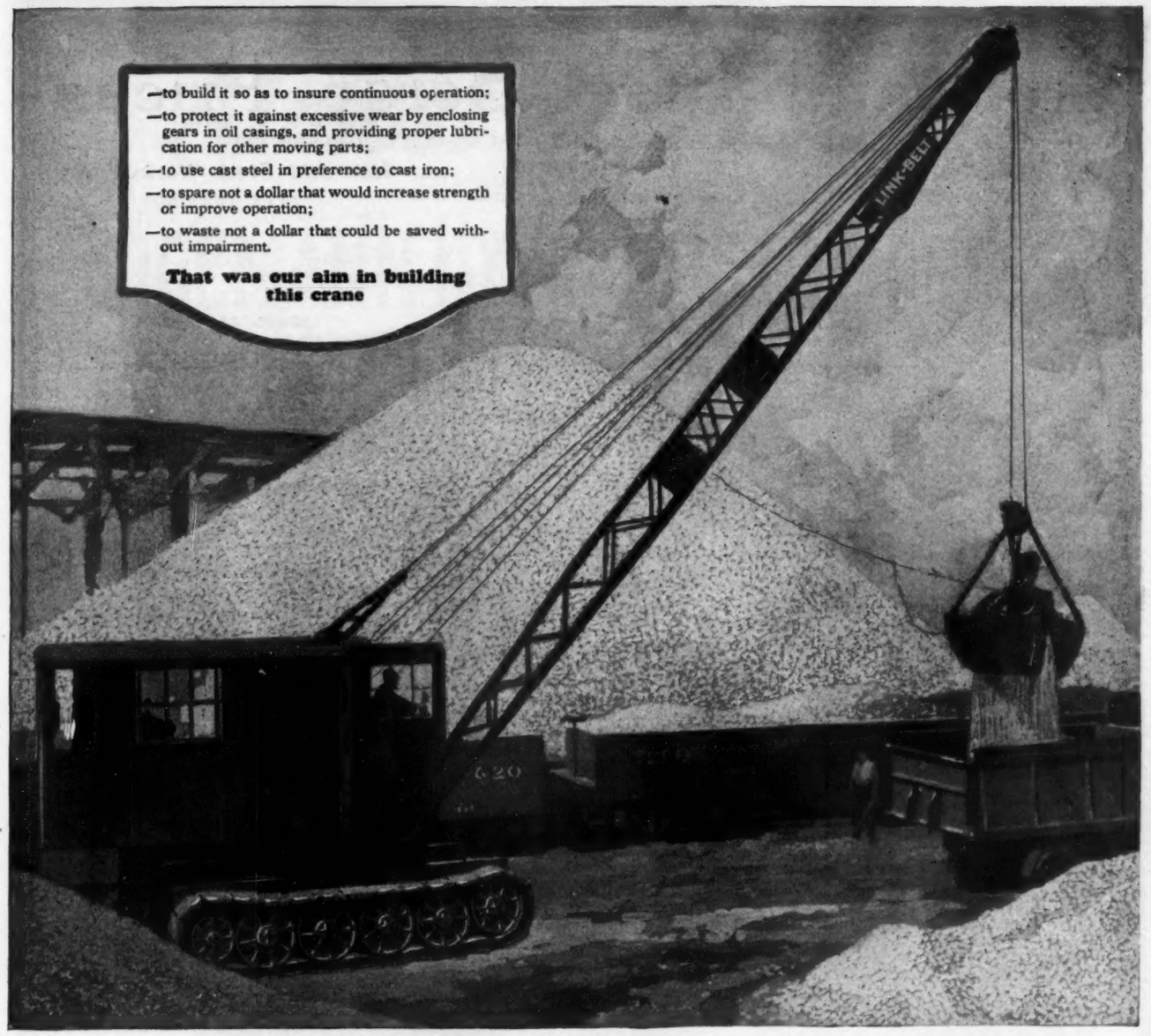
Outside diameter	Net prices per foot f.o.b. Pittsburgh Gage	Price
2-inch	12-gage	15c
2-inch	12-gage	15c
2-inch	11-gage	16c
2-inch	10-gage	17c
2¼-inch	12-gage	17c
2¼-inch	11-gage	18c
2¼-inch	10-gage	20c
3-inch	7-gage	35c
1½-inch	9-gage	15c
5⅜-inch	9-gage	55c
5½-inch	9-gage	57c

Plus usual extras for forming and for long lengths.

Hot Rolled Alloy Steels

Prices per pound, Pittsburgh

S. A. E. Series—	
2300 (3½ per cent nickel)	5.25c
3100 (nickel chromium)	4.25c
6100 (chrome vanadium)	5.00c
6100 (chrome vanadium spring)	4.75c
9250 (Silico manganese spring)	4.00c to 4.25c


—to build it so as to insure continuous operation;
—to protect it against excessive wear by enclosing gears in oil casings, and providing proper lubrication for other moving parts;
—to use cast steel in preference to cast iron;
—to spare not a dollar that would increase strength or improve operation;
—to waste not a dollar that could be saved without impairment.
That was our aim in building this crane
LINK-BELT
620

For Rough Work and Rough Handling

Other Link-Belt Products

Conveyors for Coal and Ashes and all materials
Locomotive Cranes
Electric Hoists
Skip Hoists
Portable Loaders
Silent Chain Drives

World's largest manufacturers of Elevating, Conveying and Power Transmission Machinery.

Send for Catalogs

THE Link-Belt "Built for Service" Crawler Crane is built for continuous operation. It is a most successful labor-saver and money earner, and is as useful in the yard of an industrial plant, as it is in a railroad yard, at a coal mine or on a contractor's job.

It is a universal machine, supplying its own tracks and propelling itself to any place where an opportunity for cheap and rapid handling of material exists.

The experience of twenty-five years of locomotive crane building, and more than forty years of machinery building has entered into this newest addition to the Link-Belt line.

For detailed information, communicate with our nearest office. Also send for book No. 695.

LINK-BELT COMPANY

PHILADELPHIA, 2045 Hunting Park Ave. CHICAGO, 300 W. Pershing Road
INDIANAPOLIS, P. O. Box 346 Offices in Industrial Centers.

1498

LINK-BELT

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	14.00 to 15.00
Boston (dealers)	12.00 to 12.50
Buffalo	18.50 to 19.00
Chicago	17.00 to 17.50
Cleveland	18.75 to 19.00
Cincinnati	15.50 to 16.00
Detroit (dealers)	16.00 to 16.50
Eastern Pennsylvania	17.00 to 18.00
New York (dealers)	13.00 to 13.50
Pittsburgh	20.00 to 20.50
St. Louis	17.00 to 17.50
Valleys	20.00 to 20.50
No. 1 railroad steel New York (dealers)	13.25 to 13.75

COMPRESSED SHEETS

Buffalo	18.50 to 19.00
Chicago	14.50 to 15.00
Cleveland	16.25 to 16.50
Detroit (dealers)	15.00 to 15.50
Pittsburgh	17.50 to 18.00
Valley	19.25 to 19.50

BUNDLED SHEETS

Buffalo	13.00 to 13.50
Cincinnati	11.50 to 12.00
Cleveland	13.00 to 13.50
Detroit	11.50 to 12.00
Eastern Pennsylvania	14.50 to 15.00
Pittsburgh	16.00 to 16.50
St. Louis	11.00 to 11.50
Valleys	16.00 to 16.25

SHEET CLIPPINGS, LOOSE

Chicago	11.00 to 11.50
Detroit	10.50 to 11.00

STEEL RAILS, SHORT

Birmingham	12.00 to 12.50
Boston (dealers)	12.00 to 12.50
Chicago	21.00 to 21.50
Cincinnati	19.50 to 20.00
Cleveland (over 6 pt.)	17.50 to 17.75
St. Louis	20.50 to 21.00

STOVE PLATE

Birmingham	15.50 to 16.00
Boston (consumers)	16.00 to 16.50
Buffalo	17.00 to 17.50
Pittsburgh	15.50 to 16.00
Chicago	19.00 to 19.50
Cincinnati (net iron)	12.00 to 12.50
Cleveland	17.00 to 17.25
Detroit (net ton) (dealers)	15.50 to 16.00
Eastern Pennsylvania	16.50 to 17.50
New York (dealers)	13.00 to 14.00
Pittsburgh	15.00 to 15.50
St. Louis	18.75 to 19.25

LOW PHOSPHORUS

Buffalo	22.50 to 23.00
Cincinnati	16.00 to 16.50
Eastern Pennsylvania	23.00 to 24.00
Pitts., billets and bloom crops	24.00 to 24.50

SHOVELING STEEL

Chicago	16.75 to 17.00
Pittsburgh	15.50 to 16.00
St. Louis	16.75 to 17.25

KNUCKLES, COUPLERS, SPRINGS

Chicago	20.50 to 21.00
Eastern Pennsylvania	23.00 to 23 50
Pittsburgh	21.50 to 22.00
St. Louis	22.00 to 22.50

FROGS, SWITCHES, GUARDS

Chicago	18.50 to 19.00
Eastern Pennsylvania	17.00 to 18.00
St. Louis	18.50 to 19.00

BOILER PLATE, CUT

St. Louis	11.75 to 12.25

ANGLE BARS—STEEL

Chicago	20.00 to 20.50
St. Louis	19.00 to 19.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	12.00 to 13.00
Boston (dealers)	13.50 to 14.00
Buffalo	16.00 to 17.00
Cleveland, No. 1	16.00 to 16.50
Chicago, No. 1	16.50 to 17.00
Chicago, No. 2	17.00 to 17.50
Cincinnati, No. 1	13.00 to 13.50
Detroit, No. 2	16.00 to 16.50
Eastern Pennsylvania	19.00 to 20.00
New York, No. 1 (dealers)	16.00 to 16.50
Pittsburgh, No. 1	17.00 to 17.50
Pittsburgh, No. 2	20.00 to 20.50
St. Louis, No. 1	16.50 to 17.00
St. Louis, No. 2	17.00 to 17.50

WROUGHT PIPE

Boston (dealers)	11.50 to 12.00
Buffalo	13.50 to 14.00
Eastern Pennsylvania	16.00 to 16.50
New York (dealers)	12.00 to 12.50

YARD WROUGHT

Boston	12.00 to 12.50
Eastern Pennsylvania	17.00 to 18.00

CITY WROUGHT

New York, long	15.00 to 15.50

BUSHELING

Buffalo	15.00 to 15.50
Chicago, No. 1	15.25 to 16.00
Chicago, No. 2	10.75 to 11.25
Cincinnati, No. 1	12.00 to 12.50
Cleveland, No. 1	13.25 to 13.50
Cleveland, No. 2	12.25 to 12.50
Detroit, No. 1	12.00 to 12.50
Detroit, No. 2 (new)	13.00 to 13.50
Detroit, No. 2 (old)	9.50 to 10.00
Eastern Pennsylvania	15.50 to 16.00
Pittsburgh, No. 1	17.00 to 17.50
St. Louis, No. 1	16.75 to 17.25

MACHINE SHOP TURNINGS

Birmingham	8.00 to 9.00
Boston (dealers)	10.00 to 10.50
Buffalo	12.50 to 13.00
Chicago	10.00 to 10.50
Cincinnati	10.00 to 10.50
Cleveland	14.75 to 15.00
Detroit (dealers)	11.00 to 11.50
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	11.00 to 11.50
Pittsburgh	15.00 to 15.50
St Louis	10.50 to 11.00
Valleys	14.25 to 14.75

CAST IRON BORINGS

Birmingham (chemical)	15.00 to 16.00
Birmingham (plain)	9.00 to 10.00
Boston (chemical)	12.50 to 13.00
Boston (dealers)	11.00 to 11.50
Buffalo	14.00 to 14.50
Chicago	14.50 to 15.00
Cincinnati	11.50 to 12.00
Cleveland	15.00 to 15.25
Detroit (dealers)	11.50 to 12.00
Eastern Pennsylvania (chem.)	17.00 to 18.00
Eastern Pennsylvania	15.00 to 15.50
New York (dealers' price)	12.00 to 12.25
Pittsburgh	15.50 to 16.00
St. Louis	13.00 to 13.50
Valleys	15.25 to 15.50

MIXED BORINGS AND TURNINGS
For blast furnace use

Boston (dealers)	10.00 to 10.50
Cleveland	15.00 to 15.25
Detroit (dealers)	11.50 to 12.00
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	11.75 to 12.25

IRON AXLES

Birmingham	21.00 to 22.00
Boston (consumers)	31.00 to 32.00
Buffalo	28.00
Chicago	32.50 to 33.00
Cincinnati	23.00 to 23.50
Eastern Pennsylvania	26.00 to 28.00
New York (dealers)	25.75 to 26.25
St. Louis	30.50 to 31.00

IRON RAILS

Buffalo	20.00 to 21.00
Chicago	20.00 to 20.50
Cincinnati	15.00 to 15.50
St. Louis	17.00 to 17.50

PIPES AND FLUES

Chicago	12.50 to 13.00
Cincinnati	10.00 to 10.50
Cleveland	13.25 to 13.50
St. Louis	13.00 to 13.50

RAILROAD GRATE BARS

Buffalo	17.50 to 18.00
Chicago	17.50 to 18.00
Cleveland	17.00 to 17.25
Eastern Pennsylvania	16.50 to 17.50
New York (dealers)	14.00 to 14.50
St. Louis	19.00 to 19.50

FORGE FLASHINGS

Boston (dealers)	10.00 to 10.50
Chicago, small	13.00 to 13.50
Cleveland (under 10 in.)	13.75 to 14.00
Cleveland (over 10 in.)	12.75 to 13.00
Detroit (dealers)	12.00 to 12.50

FORGE SCRAP

Boston (dealers)	10.50 to 11.00
Chicago	20.50 to 21.00
Eastern Pennsylvania	15.00 to 15.50

ARCH BARS AND TRANSOMS

Chicago	22.50 to 23.00
St. Louis	24.00 to 24.50

ANGLE BARS—IRON

Chicago	22.50 to 23.00
St. Louis	24.00 to 24.50

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	11.00 to 11.50
Buffalo	15.00 to 15.50
Chicago	15.50 to 16.00
Cleveland	15.50 to 15.75
Eastern Pennsylvania	15.00 to 16.00
Pittsburgh	18.00 to 18.50
St. Louis	14.00 to 14.50

STEEL CAR AXLES

Birmingham	19.00 to 20.00
Boston (consumers)	20.00 to 21.00
Buffalo	21.00 to 22.00
Chicago	22.00 to 22.50
Cleveland	22.00 to 22.25
Eastern Pennsylvania	22.00 to 23.00
New York (dealers)	19.00 to 19.50
Pittsburgh	21.00 to 22.00
St. Louis	23.50 to 24.00

SHAFTING

Boston (consumers)	21.00 to 22.00
Chicago	23.50 to 24.00
Eastern Pennsylvania	21.00 to 23.00
New York (dealers)	18.50 to 19.00
St. Louis	23.00 to 23.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, tram car	17.00 to 18.00
Birmingham, iron	16.00 to 17.00
Boston (consumers)6	20.00 to 20.50
Buffalo	20.00 to 20.50
Chicago, iron	20.50 to 21.00
Cincinnati	14.50 to 15.00
Eastern Pennsylvania	18.50 to 19.50
New York iron (dealers)	15.75 to 16.25
Pittsburgh, iron	20.00 to 20.50
Pittsburgh, steel	21.50 to 22.00
St. Louis, iron	21.00 to 21.50

NO. 1 CAST SCRAP

Birmingham, cupola	20.00 to 21.00
Boston (consumers)	22.50 to 23.00
Buffalo	20.00 to 20.50
Chicago, cupola	21.00 to 21.50
Cincinnati No. 1 machinery cupola (net tons)	19.50 to 20.00
Cleveland, cupola	21.50 to 22.00
Detroit (net tons) (dealers)	17.50 to 18.00
Eastern Pennsylvania, cupola	19.00 to 20.00
New York, cupola (dealers)	16.50 to 17.00
Pittsburgh, cupola	19.50 to 20.00
San Francisco	25.00 to 26.00
St. Louis, railroad	21.50 to 22.00
St. Louis, agricultural	21.50 to 22.00
Valleys	21.00 to 22.00

HEAVY CAST

Boston (consumers)	19.00 to 19.50
Buffalo (breakable)	16.50 to 17.00
Cleveland	15.25 to 15.50
Detroit (automobile) (net ton)	23.50 to 24.00
Eastern Pennsylvania	17.00 to 18.00
New York (dealers)	15.50 to 17.00
Pittsburgh	18.50 to 19.00

MALLEABLE

Boston (railroad)	19.00 to 20.00
Buffalo	20.50 to 21.00
Chicago, railroad	21.75 to 22.25
Chicago, agricultural	20.00 to 21.00
Cincinnati, agricultural	15.50 to 16.00
Cincinnati, railroad	20.00 to 20.50
Cleveland, agricultural	20.50 to 21.00
Cleveland, railroad	21.25 to 21.50
Detroit (dealers)	18.00 to 18.50
Eastern Pennsylvania, railroad	17.00 to 18.00
Pittsburgh, railroad	18.50 to 19.00
St. Louis, agricultural	18.00 to 18.50
St. Louis, railroad	18.25 to 18.75

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	17.00 to 17.50
Boston (dealers)	16.00 to 16.25
Chicago	20.00 to 20.50
Cleveland	19.75 to 20.00
Detroit	16.50 to 17.00
Eastern Pennsylvania	19.00 to 20.00
New York (dealers)	18.50 to 19.00
Pittsburgh district	22.50 to 23.00
St. Louis	19.00 to 19.50

LOCOMOTIVE TIRES

Chicago	19.00 to 20.00
St. Louis	17.50 to 18.00

LOW PHOSPHORUS PUNCHINGS

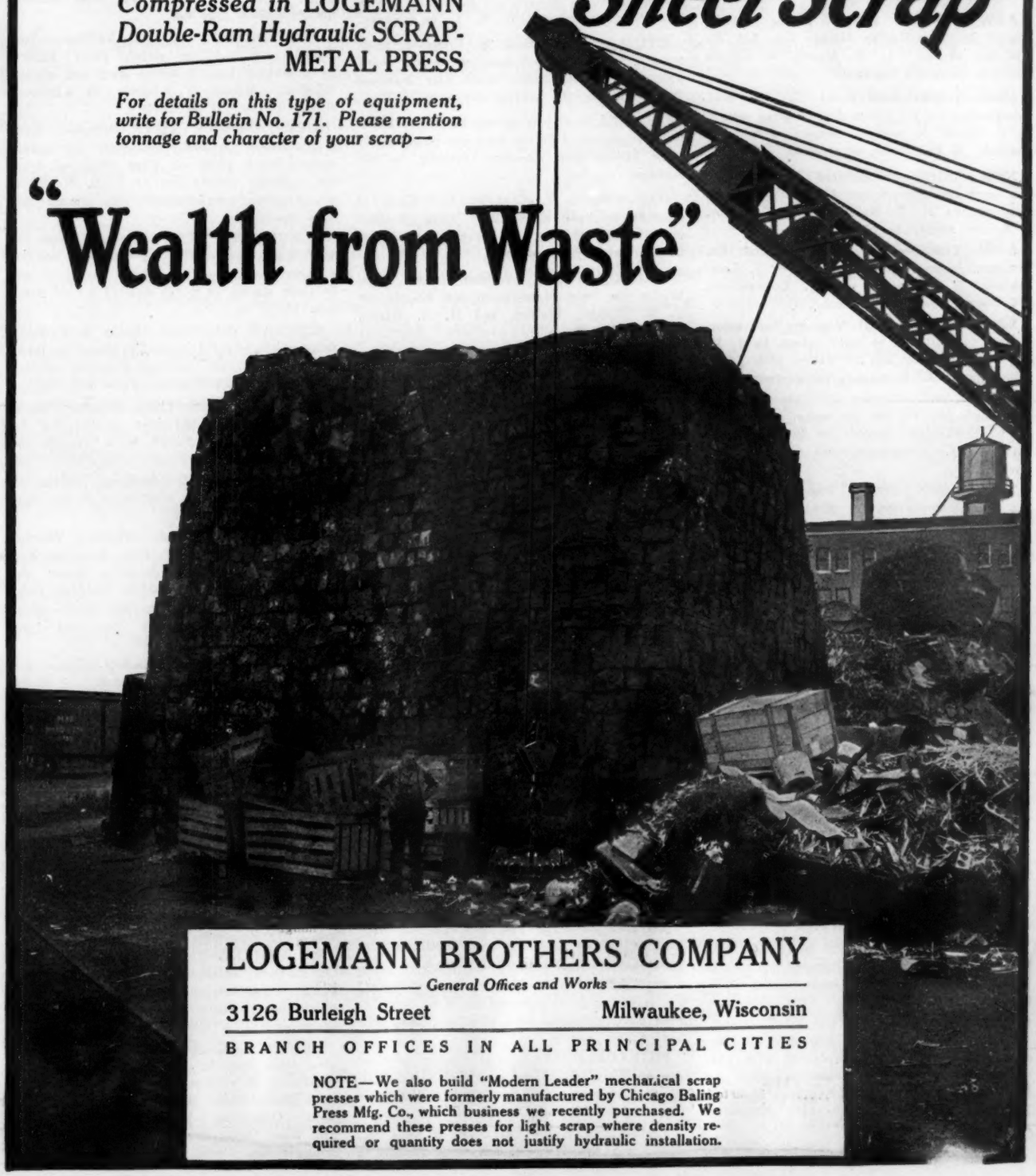
Chicago	19.00 to 19.50
Eastern Pennsylvania	23.00 to 24.00
Pittsburgh	22.00 to 23.00

Almost 2000 Tons - of "LOGEMANN HYDRAULIC-COMPRESSED" Sheet Scrap

Compressed in LOGEMANN *Double-Ram Hydraulic* SCRAP-METAL PRESS

For details on this type of equipment, write for Bulletin No. 171. Please mention tonnage and character of your scrap—

"Wealth from Waste"



LOGEMANN BROTHERS COMPANY

General Offices and Works

3126 Burleigh Street Milwaukee, Wisconsin

BRANCH OFFICES IN ALL PRINCIPAL CITIES

NOTE—We also build "Modern Leader" mechanical scrap presses which were formerly manufactured by Chicago Baling Press Mfg. Co., which business we recently purchased. We recommend these presses for light scrap where density required or quantity does not justify hydraulic installation.

Construction and Enterprise

(*Concluded from Page 754*)

with MacFarlane & Harris, Rochester, as attorney.

DUNKIRK, N. Y.—Dunkirk Metal Products Corp. has been incorporated with 2500 shares $100 par preferred stock and 2500 shares no par common stock, by R. E. Sandberg, I. C. Stafford and F. Gifford, with Mott & Ottaway, Jamestown, N. Y., as attorney.

LOCKPORT, N. Y.—Master Reverse Gear Corp. has been incorporated with 200 shares $50 preferred stock, and 200 shares no par value common, by S. B. Tagg, F. E. Timian and W. B. Ellis, with Lee, Ward & Riley, Lockport, as attorney.

NEW YORK—A $100,000 garage will be erected by Bean-Murray Garage Co., 875 St. Nicholas avenue. L. B. Mapes, 30 Church street, is consulting engineer.

NEW YORK—Arco Metal Co. has been incorporated for $25,000 to deal in scrap metals, by C. Baurr, M. and S. Shapiro, with J. S. Barshak, 38 Park Row, as attorney.

NEW YORK—Consolidated Foundry Co. has been incorporated for $10,000 by R. H. Robbins and M. F. Nally with J. T. Crane, 2 Rector street, as attorney.

NEW YORK—Elite Specialty Metal Co. has been incorporated for $10,000 by J. Lowenbraun, N. Rosevsky, with J. Lowenbraun, 116 Nassau street, as attorney.

NEW YORK—J. H. H. Voss has been incorporated for $100,000 to make valves, by J. H. H. Voss, A. Voss and C. Bauer, with J. K. Ellenbogen, 220 Broadway, as attorney.

NEW YORK—Edwaco Co. has been incorporated for $40,000 to make cutlery, by E. L. Cowen, M. Rosen and S. C. Rodish, with M. J. Hamburger, 283 Broadway, as attorney.

NEW YORK—Tension Piston Ring Co. has been incorporated for $10,000 by E. S. Stillman, H. G. Leach and A. O. Wolff, with F. L. Gross, 189 Montague street, Brooklyn, N. Y., as attorney.

NEW YORK—F. Maldari & Bros. has been incorporated for $25,000 to build macaroni machinery, by F. and A. and D. Maldari, with L. Rosenberg, 200 Broadway, as attorney.

NEW YORK—Curtis McGee has been incorporated for $75,000 to manufacture machinery and dynamos by J. P. O'Brien, J. J. Curtis and B. McGee, with E. Frankel, 233 Broadway, as attorney.

NEW YORK—Fowler Machinery & Equipment Corp. has been incorporated for $25,000 by M. Morton, E. E. Palmer and I. M. Payne, with Reynolds, Richards, McCutchen & Logan, 68 William street, as attorney.

NEW YORK—S. J. Senter & Co. has been incorporated for $25,000 to manufacture metal parts and products by H. Edwards, R. K. Richardson and S. J. Senter, with W. B. Hoffstadter, 299 Broadway, as attorney.

NEW YORK—Amity Sand Blast Corp. has been incorporated for $5000 to deal in cleansing stone, by W. and D. Goodman and E. E Hamm, with P. H. Goldbaum, 276 Fifth avenue, as attorney.

NEW YORK—Building Equipment & Machinery Co. has been incorporated with 1000 shares of no par value common stock by L. W. Hatheway, W. H. Runcie and H. F. Pratt, with W. E. Winnie, 1275 Broadway, as attorney.

QUEENS, L. I., N. Y.—Peak Mfg. Co. has been incorporated with 100 shares preferred stock $100 par value and 600 shares no par value common stock, to manufacture encasements for battery chargers, by F. T. Moore, P. F. Gunn and L. Enright Jr., with J. T. Fenlon, 55 Liberty street, New York, as attorney.

Where additional information is presented, reference is made to date of issue in which previous item appeared.

SCOTIA, N. Y.—G. E. Vanvorst Co. has been incorporated for $90,000 to manufacture and deal in hardware and equipment, by G. E. Vanvorst, W. H. Millard and E. C. Hoyt, with Borst & Smith, Schenectady, N. Y., as attorney.

UTICA, N. Y.—Hart & Crousnse plans 1-story, 144 x 204-foot foundry costing about $200,000. H. R. Beebe, Utica City National Bank building, is general contractor.

DURHAM, N. C.—Work will be started shortly on erection of $100,000 municipal power plant, plans having been submitted recently to city manager Rigsby.

OXFORD, N. C.—Granville Iron Corp. is reported to have leased 2000 acres of land in Granville county to develop iron ore. B. F. Lewis is president.

WELDON, N. C.—Weldon Sheet Metal Works has been incorporated for $25,000 by T. A. Chappel, Weldon, and H. B. Harris, Kinston, N. C.

AVON BEACH, O.—Cleveland Electric Illuminating Co. will begin construction about April 1 of a $10,000,000 power plant system.

CLEVELAND—Standard Sanitary Mfg. Co. has purchased three parcels of land at Mayfield and Random roads as a site for a $200,000 warehouse to be built this year.

CLEVELAND—The Bowler Foundry Co., 1688 Columbus road, will take bids about April 1 for a 90 x 200-foot foundry, 100 x 185-foot pattern shop, 35 x 45-foot garage and 40 x 160-foot cleaning and shipping department building. A. G. Simon, Hippodrome building, is engineer. *Noted Feb.* 21.

COLUMBUS, O.—Columbus Bolt Works plans $200,000 additions and improvements to its plant. J. R. Poste is president.

GENEVA, O.—The Champion Hardware Co. will build a 3-story, 50 x 130-foot reinforced concrete manufacturing plant for which Lockwood, Greene & Co. is engineer.

LIMA, O.—Golley & Finley Iron Works Co. has been incorporated for $20,000 by Charles D. Finley and Ralph P. Mackenzie.

SHARONVILLE, O.—Nickel Plate railroad contemplates constructing roundhouse addition.

ZANESVILLE, O.—The Mosaic Tile Co. plans 3-story, 80 x 140-foot reinforced concrete plant for which Lockwood, Greene & Co. is engineer.

PHILADELPHIA—Fox Mfg. Co. has been incorporated for $5000 to build machinery by J. H. Connelly, 5031 Newhall street.

PHILADELPHIA—Electric Storage Battery Co. is having plans prepared by Wm. Steele & Sons Co. for erection of a plant at Rising Sun and Adams streets.

PHILADELPHIA—General contract for erection of Cherry substation, at Eleventh and Arch streets, has been placed by Philadelphia Electric Co., to John M. Gill Construction Co.

PHILADELPHIA—Wm. Steele & Sons Co., 219 North Broad street, has been awarded a $45,000 contract for erection of coal trestles and storage facilities for Chalfant & Scott, Forty-ninth street and Union.

PHILADELPHIA—Atwater-Kent Mfg. Co. has awarded the general contract for erection of a plant at Wissahickon avenue and Abbottsford road, to Erwin & Leighton. According to plans by the Ballinger Co., architect, the building will be one story high, of brick and steel construction.

SPRING CITY, PA.—Buckwalter Stove Co. has started constructing addition to plant No. 2. Addition will be 100 x 380 feet and will be used for enameling, pickling, sand blasting, grinding and polishing. Beling-Bush Co. is contractor.

PROVIDENCE, R. I.—Construction contracts have been let for 5-story, 65 x 125-foot brick, stone and concrete and steel building for Providence Gas Co.

PROVIDENCE, R. I.—Builders Iron Foundry, 9 Codding street, plans 1-story, 35 x 80-foot, brick machine shop and storage building. Monks & Johnson, 99 Chauncey street, Boston, is architect.

CHATTANOOGA, TENN.—Turnbull Cone & Machinery Co. has let contracts for 4-story manufacturing plant on Fort street of brick and concrete construction to T. S. Moudy & Co. Company manufactures ice cream and cone machinery.

CLEVELAND, TENN.—Hardwick Stove Co. will begin construction at once of $75,000 molding department extension. Addition will be three stories, 60 x 120 feet, of brick. *Noted Jan.* 17.

ETOWAH, TENN.—Louisville & Nashville railroad has awarded contract to Platoff & Bush, Louisville, Ky., for constructing 1-story machine shop costing about $25,000. *Noted Feb.* 21.

BRECKENRIDGE, TEX.—Buckeye Pipe & Supply Co., Inc., has been incorporated for $100,000 by R. W. Raney, R. L. Loomis and Harry Shulman.

CLEBURNE, TEX.—Atchison, Topeka & Santa Fe railroad plans addition to its passenger station and shops here.

WHEELING, W. VA.—Wheeling Traction Co., subsidiary of West Penn Railways Co., has let contracts for operating barns and overhauling and extensions to machine shop, carpenter shop, paint shop, etc. J. E. Moss Iron Works has contract for construction and fabrication of steel work.

BARABOO, WIS.—A $20,000 addition will be made to the garage and repair shop of H. H. Mueller. It will be two stories, 65 x 92 feet. Architect Edward Tough, of Madison, is completing plans.

BURLINGTON, WIS.—Bids close March 15 in the office of Nettie Karcher, clerk of the school board, for construction of $300,000 senior vocational high school, two stories, 185 x 245 feet. Plans are by Architects Oppenhaner & Obel, Wausau and Green Bay, Wis.

LA CROSSE, WIS.—Automobile accessories and parts will be manufactured by Accessories Production Co., incorporated here with $50,000 capital stock by J. K. Holley, E. A. Morgan and Harry Robinson.

MILWAUKEE—The Milwaukee Service Parts Co. has been incorporated for $25,000 to manufacture automobile and motor truck parts, materials and accessories, by W. A. King, J. L. Warte and D. J. O'Brien.

MILWAUKEE—Articles of incorporation have been filed by the Midwest Ventilating Works of Milwaukee, capital stock $6000, by Lee Cahill, Elmer Nachsheim and Roland J. Murr. Offices have been opened at room 720, 216 West Water street. A factory is being arranged for.